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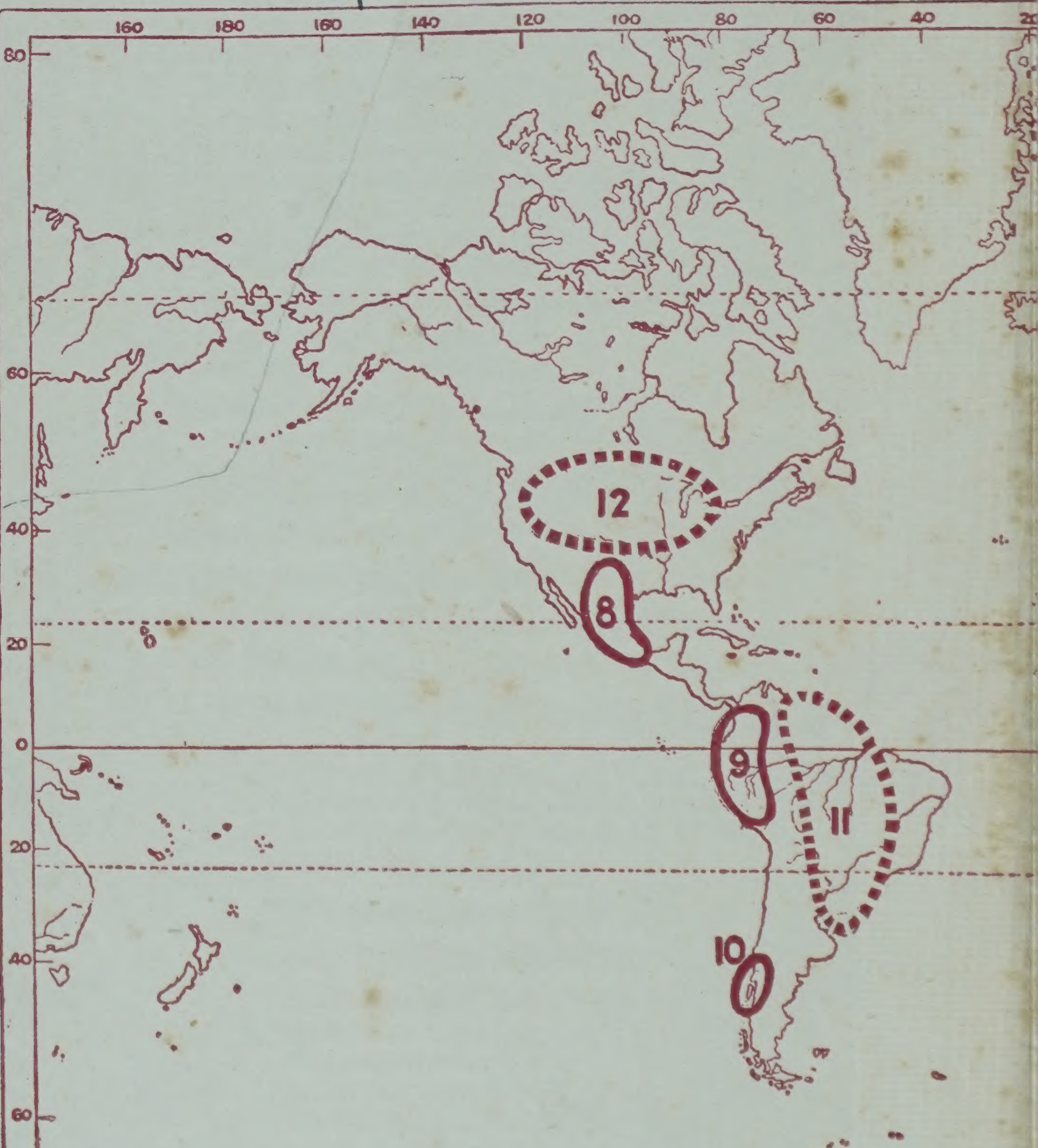

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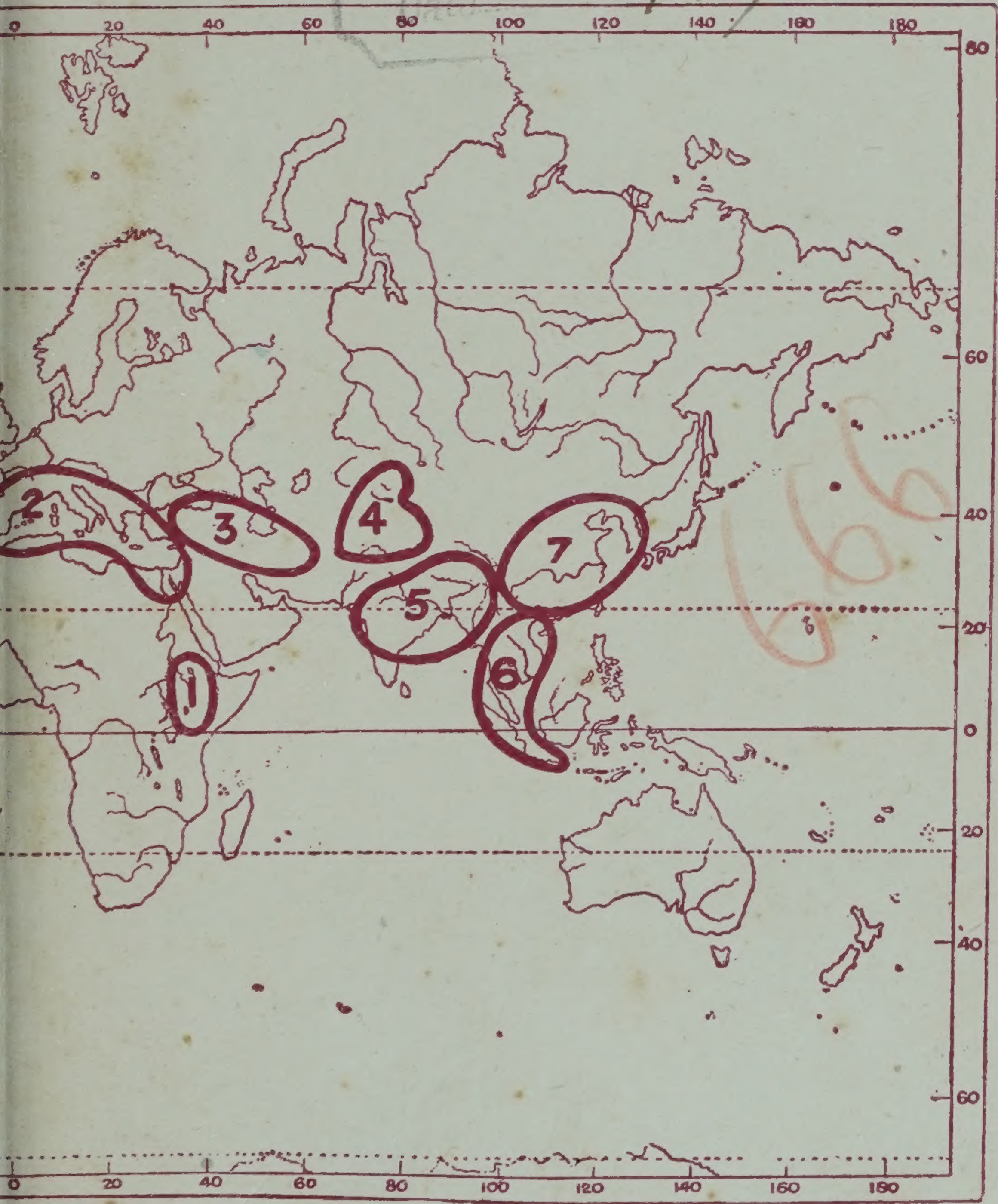

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TO

NIKOLAI IVANOVITCH VAVILOV

1885–1942

For. Mem. R.S.

who inspired this work

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CONTENTS

PAGE

PREFACE 7

INTRODUCTION BY C. D. DARLINGTON . . . 10

I THE ORIGIN OF CULTIVATED PLANTS . . . 10

1 THE FOUNDATIONS 10

2 CENTRES OF ORIGIN 12

3 EVOLUTION BY CULTIVATION . . . 18

4 THE INVENTION OF PLANT BREEDING . . 23

II INTRODUCING THE CHROMOSOMES . . . 25

III THE USE AND MEANING OF CHROMOSOME NUMBERS 31

EXPLANATION OF THE CATALOGUE

FIRST COLUMN: SYSTEMATIC ORDER AND BOTANICAL NAMES 38

SECOND COLUMN: POPULAR NAMES . . . 39

THIRD COLUMN: CHROMOSOME NUMBERS . . 40

FOURTH COLUMN: AUTHORS 40

FIFTH COLUMN: USES OF PLANTS . . . 41

SIXTH COLUMN: DISTRIBUTIONS 43

ACKNOWLEDGMENTS 44

THE CATALOGUE

I GYMNOSPERMS 45

II DICOTYLEDONS 51

III MONOCOTYLEDONS 276

BIBLIOGRAPHY 355

INDEX TO FAMILIES AND GENERA 383

PREFACE

THERE are two reasons why botanical studies of all kinds have been concentrated on cultivated plants. The first is the obvious one that we depend on them for our existence. The second is the less obvious one, though it was clear to Darwin and Mendel, that they provide the most accurate and most extensive information on those principles of heredity and variation which control evolution in all plants and in animals as well.

Now the foundation of botanical study is classification. We want to know what group of common descent our plant belongs to, and how and where that group exists in nature, before we go any further with it. The answers are at once important in dealing with economic plants, for they tell us, or should tell us, what is the range of variation and distribution in that group and hence what opportunities there are likely to be for selection, for hybridisation, and for acclimatisation.

The cultivator of plants has thus three demands to make of the systematic botanist. First, what are the wild plants that will provide him with the food or fibre or drug he wants? Secondly, what variation of form, habitat and distribution do these plants show in nature? Thirdly, to what extent will related groups breed together?

All these questions the systematist has done his best to answer by assigning generic, specific and varietal names to plants of given morphological types and of given geographical and ecological distributions. Experience, however, has shown that plant variation lays many traps for the morphologist. Unaided by analysis and experiment he works in the dark. Hereditary changes are continually taking place under the surface which affect the answers to the second and third questions. These changes lead to the formation of new breeding groups which are not always detectable from differences of shape and size. Such changes are liable to alter the method of breeding, the possibilities of crossing, the type of heredity, the fertility, in a word, the whole future of the species.

Morphology, particularly of the dead plant, thus often misses the functional meaning it was formerly supposed to possess. The decay of classical systematics is due to this loss in functional meaning of the over-named, and often over-divided, museum species. By putting classification back on a genetic basis, Ray's *distincta propagatio ex semine*, we can restore to the species of systematics its former vitality and usefulness.

How do we discover this genetic basis ? Cryptic changes in the heredity of plant species are largely ascertainable from a study of the chromosomes, their number at mitosis, and their behaviour at meiosis and in the pollen grain. As we have shown elsewhere, this business of finding out what the chromosomes are doing has been vastly simplified by the technical advances of the last ten years.

A variety of processes, described in the introduction and illustrated in the catalogue, are now revealed by chromosome study as having been the unconscious instruments, equally of species formation and of crop plant improvement. We now know how it was done. Past evolution and present plant breeding work with the same materials and obey the same rules. And, knowing this, we can see which methods are likely to prove the most profitable in the improvement of a new crop or the re-adaptation of an old one to new climates and uses.

For these purposes a chromosome survey of cultivated plants points the way our first steps must go. Number is, of course, only the beginning of the story. The occurrence of " inert " supernumeraries and of polyploid forms within the species ; the type of polyploidy, whether even or odd, auto- or allo-ploid ; its primary relationship with vigour, hardiness and fertility, its secondary relationship with colonisation, perennial habit, degree of vegetative or clonal propagation, and the different kinds of apomixis ; the kinds and degrees of isolation with their effects on frequency of crossing and amount of hybridity ; all these conditions are important. They present problems now well enough understood for us to be able to combine our understanding of them with chromosome studies in furthering the work of acclimatisation, selection and plant breeding that lies ahead of us.

But in this work, in place of the desultory and disconnected enquiries of the past, we shall need in the future research organised on the basis of the most precise and comprehensive knowledge of the conditions of breeding behaviour in the plants that matter. The present systematic and geographical arrangement, or, as we have called it, atlas, has been designed to meet this need. It is a first rough attempt but it indicates the scope of the materials and it suggests the plan for their investigation.

C. D. DARLINGTON
E. K. JANAKI AMMAL

John Innes Horticultural Institution
Merton, SW19

> " And I will multiply the fruit of the tree, and the increase of the field, that ye shall receive no more reproach of famine among the heathen."
>
> —*Ezekiel* xxxvi. 30.

INTRODUCTION

By C. D. DARLINGTON

I. THE ORIGIN OF CULTIVATED PLANTS

1. *THE FOUNDATIONS*

Man's earliest belief was a simple one. He had no doubt that cultivated plants were an original gift of the gods. This belief may well have been weakened by the discovery of new and valuable crop plants existing exclusively in America, but another opinion almost as old, and still widely held to-day, was ready to take its place. It was that cultivation itself directly improved the heredity of plants which were taken from the wild. Better soil, better fruit. And so the question was raised: what wild plants do they come from, and where? Linnaeus tried to give an answer but there was more legend than history to guide him. It was not possible to say at that time whether maize and tobacco were old or new world plants, and such distinctions as that between Indian and American cottons were unknown. So it was that in 1807 Alexander von Humboldt could still say that we knew nothing about the original sources of our most useful plants. Their origin seemed indeed " un secret impénétrable."

Our present elucidation of this mystery derives from three sources in the last century. The first is the work of De Candolle, his " Géographie Botanique Raisonnée," of 1855, and his " Origine des Plantes Cultivées," of 1882. De Candolle's methods and materials were new and enlarged. In detail he revised the earlier information by correlating it with the new evidence of archaeology and palaeontology, history and philology. Ancient history and language, however, were not very helpful.[1] Nor were his premises and his purpose other than Linnaean : he wished to show, and did show to his own satisfaction, that the different kinds of cultivated plants could be traced back to wild ancestors represented by species still living and still recognisable. Of his 247 ancestral species, 199 Old World, 45 New World, and 3 uncertain, only 7 did he consider extinct.

This view, over-comforting by our present standards, was due to De Candolle's Linnaean simplicity. *Varietates laevissimas non curat botanicus.* Species were comprehensive units and their internal relationships could be neglected. The wheats could best be divided into two species and certainly not more than four. All the cultivated races of *Brassica*, even swedes apparently, were still to be seen wild in Europe or Siberia. And worst of all, with regard to the method of transformation, such a change as that which, in his view, turned *Raphanus raphanistrum* into *Raphanus sativus* could arise by the direct and Lamarckian effect of cultivation.

Darwin, in contrast to De Candolle, takes, as we might expect, a Darwinian point of view. In his " Variation of Animals and Plants under Domestication," published in 1868, Darwin is interested in showing that those connections with wild forms which De Candolle claimed to have established are no longer to be traced. The ancestral wild plants in his view were exceedingly poor. His own experience of primitive people suggested that in the beginning man was " compelled by severe want to try as food almost everything which he could chew and swallow," a view with much biblical corroboration. He concluded that " many of these plants have been profoundly modified by culture." How they were modified is a question on which, as we know, he changed his mind. In

---

[1] As Pliny puts it (Hist. Nat. XVIII, 8) : " Frumenti genera non eadem ubique : neque ubi eadem sunt, iisdem nominibus. Vulgatissima *far*, quod *adoreum* veteres appellavere, *siligo*, *triticum*. Haec plurimis terris communia. *Arinca* Galliarum propria, copiosa et Italiae est. Aegypto autem ac Syriae, Ciliciaeque et Asiae, ac Graeciae peculiares *zea*, *olyra*, *typhe*."

He was referring to *Triticum monococcum*, *dicoccum*, *turgidum*, *durum*, and *vulgare ;* but which was which he could not, and we cannot, truly tell. The situation for species then was what often obtains for varieties now.

1859 it was by selection ; in 1868 it was at least partly by the direct Lamarckian effect of " pangenesis," which he invented to explain how variation could be maintained in spite of the effect of his " blending inheritance."

Darwin, however, did not claim to know anything about " the laws of inheritance," and it was here that Mendel provided the decisive correction in his " Versuche über Pflanzen-Hybriden," published in 1865. Since this work has now been twice forgotten we may do well to recall it. Mendel, like Darwin, was interested in cultivated plants because he believed they could tell us most clearly what we needed to know about the nature of variation. He makes three points of which we still need to be reminded (translation in Bateson, 1909). " No one will seriously maintain that in the open country the development of plants is ruled by other laws than in the garden bed. Here as there, changes of type must take place if the conditions of life be altered, and the species possesses the capacity of fitting itself to its new environment." Secondly, " were the change in the conditions the sole cause of variability we might expect that those cultivated plants which are grown for centuries under almost identical conditions would again attain constancy. That, as is well known, is not the case." Thirdly, " our cultivated plants are *members of various hybrid series*, whose further development in conformity with law is varied and interrupted by frequent crossings *inter se*. . . . Cultivated plants are mostly grown in great numbers and close together, affording the most favourable conditions for reciprocal fertilisation between the varieties present and the species itself." Thus it was to their special conditions of hybridisation and selection, operating under the same laws as in the wild, that Mendel attributed the origin of cultivated plants. How these conditions have operated we are now in a position to see.

2. *CENTRES OF ORIGIN*

The methods and theories of De Candolle, Darwin and Mendel were first combined in the work of Vavilov and his school. The Russian workers made a geographical survey of the genetic variation in the staple crop plants of the world. They found that these plants showed a centre or centres of diversity characteristic of each. On a first analysis (1926) Vavilov argued that six main centres could be named as sources of nearly all genetic variation. Later (1935) he has increased the number to eleven or twelve. Further, he argued that the centre of diversity was the *centre of origin* of the cultivated "species." What we shall see later will show that some species can indeed be said to have had a single and sudden origin, localised and capable of being located. With others, however, the origin is no origin at all but a gradual transformation extending over wide areas and long periods and shifting its focus in the course of time. Between the two extremes there is every gradation.

Whether sudden or gradual in its appearance, a cultivated or wild species will (if natural selection plays any part) come to show a local diversity related to its ecological diversity and this in turn will always be greatest in the mountain-and-valley regions nearest the equator. Here it is that Vavilov claims to have found the expected diversity.

TABLE 1.—CENTRES OF ORIGIN OF CROP PLANTS (after Vavilov 1935, map on back end-paper)

1. ABYSSINIA

Hordeum sativum, Hulled Barley
Sorghum vulgare, African Millet
Eragrostis abyssinica (for bread flour)
Eleusine coracana, Finger Millet
Dolichos lablab, Lablab Bean
Guizotia abyssinica, Niger Seed
Ricinus communis, Castor-oil Bean
Coffea arabica, Coffee
Hibiscus esculentus, Okra

2. MEDITERRANEAN

Triticum durum etc., Rivet Wheat
Triticum dicoccum, Wild Emmer
Avena strigosa etc., Hulled Oats
Lens esculenta, Lentil
Brassica napus, Swede Rape
Olea europaea, Olive
Ceratonia siliqua, Carob
Allium sativum, Garlic
Lactuca sativa, Lettuce
Asparagus officinalis, Asparagus
Pastinaca sativa, Parsnip
Rheum officinale, Rhubarb
Humulus lupulus, Hop

3. PERSIA

Triticum monococcum, Einkorn
Triticum vulgare, Bread Wheat
Secale cereale, Rye
Avena sativa, Oat
Brassica campestris, Rape
Papaver somniferum, Opium Poppy
Cucurbita pepo, Vegetable Marrow
Daucus carota, Carrot
Brassica oleracea, Cabbage, etc.
Ficus carica, Fig
Punica granatum, Pomegranate

Prunus divaricata, Cherry Plum
Prunus avium etc., Cherry
Prunus armeniaca, Apricot
Prunus amygdalus, Almond
Mespilus germanica, Medlar
Vitis vinifera, Grape Vine
Pistacia vera, Pistachio Nut
Diospyros lotos, Persimmon
Phoenix dactilifera, Date Palm
Crocus sativus, Saffron

4. AFGHANISTAN

Triticum compactum, Club Wheat
Triticum sphaerococcum, Indian Dwarf Wheat
Phaseolus aureus, Mungo Bean
Brassica juncea, Indian Mustard
Sesamum indicum, Sesame
Gossypium herbaceum, Cotton (2*x*)
Cucumis melo, Melon
Spinacia oleracea, Spinach
Ocimum basilicum, Sweet Basil
Pyrus communis, Pear
Pyrus malus, Apple
Juglans regia, Walnut

5. INDO–BURMA

Oryza sativa, Rice
Cajanus cajan, Dhall
Phaseolus aconitifolius, Math Bean
Phaseolus calcaratus, Rice Bean
Dolichos biflorus, Horse Gram
Vigna sinensis, Asparagus Bean
Amaranthus paniculatus, Amaranth
Solanum melongena, Egg Plant
Raphanus caudatus, Rat's Tail Radish
Colocasia antiquorum, Taro Yam
Cucumis sativus, Cucumber
Mangifera indica, Mango
Gossypium arboreum, Tree Cotton
Corchorus olitorius, Jute
Cannabis indica, Hemp
Piper nigrum, Pepper
Acacia arabica, Gum Arabic
Indigofera tinctoria, Indigo

6. SIAM—MALAYA—JAVA

Coix lachryma-jobi, Job's Tears
Dendrocalamus asper, Giant Bamboo
Dioscorea spp., Yam
Zingiber spp., Ginger
Citrus maxima etc., Pomelo
Musa sapientum, Banana
Aleurites moluccana, Tung Oil
Cocos nucifera, Cocoanut
Elettaria cardamomum, Cardamoms
Myristica fragrans, Nutmeg
Curcuma longa, Turmeric

7. CHINA

Panicum italicum etc., Millet
Avena nuda, Naked Oat
Fagopyrum esculentum, Buckwheat
Fagopyrum tataricum, India Wheat
Glycine max, Soya Bean
Stizolobium hasjoo, Velvet Bean
Phyllostachys edulis etc., Small Bamboos
Dioscorea batatas, Chinese Yam
Zizania latifolia, Manchurian Rice
Brassica chinensis etc., Pak-choy
Allium fistulosum etc., Welsh Onion
Raphanus sativus, Radish
Prunus persica, Peach
Citrus nobilis etc., Orange
Broussonetia papyrifera, Paper Mulberry
Morus alba, White Mulberry
Phaseolus angularis, Adzuki Bean
Camellia sinensis, China Tea

8. MEXICO

Zea mays, Maize
Cucurbita melanosperma, Squash
Cucurbita moschata, Musk Melon
Ipomoea batatas, Sweet Potato
Maranta arundinacea, Arrowroot
Capsicum annuum etc., Red Pepper
Gossypium hirsutum etc., Cotton (4*x*)
Agave sisalana, Sisal Hemp
Psidium guayava, Guava

9. PERU

Chenopodium quinoa, Quinoa
Phaseolus lunatus, Lima Bean
Phaseolus vulgaris, Kidney Bean
Canna edulis, Canna
Lycopersicum esculentum, Tomato

Cucurbita maxima, Pumpkin
Carica papaya etc., Papaya
Cinchona calisaya etc., Quinine
Nicotiana tabacum, Tobacco
Solanum tuberosum, Potato, *cf.* Hawkes 1944

10. CHILE

Bromus mango, Mango Grain
Madia sativa, Chilean Tarweed

11. BRAZIL—PARAGUAY

Manihot utilissima, Tapioca
Arachis hypogaea, Ground Nut
Phaseolus caracalla, Caracol
Theobroma cacao, Cocoa
Hevea brasiliensis, Para Rubber
Ananas comosa etc., Pineapples
Bertholletia excelsa, Brazil Nut
Anacardium occidentale, Cashew Nut
Passiflora edulis, Passion Fruit

12. U.S.A.

Helianthus annuus, Sunflower
Helianthus tuberosus, Jerusalem Artichoke

In this general assignment three special cases are worth separate note. The Black Mulberry is believed to come from Persia, but it has no diversity so that its origin cannot be deduced on Vavilovian lines. The Date Palm is not assigned by Vavilov to any of his regions, but is generally supposed to come from the Persian Gulf. The Cocoanut Palm assigned by Vavilov to the Malayan region, being sea-borne, must be given the East Indian Seas as its centre.

Again, some of the centres are too diffuse to deserve such a name. In Brazil, Pineapples are derived from the southern uplands, Para Rubber from the Amazon valley.

The Mediterranean diffuseness, on the other hand, depends on cultural rather than botanical considerations. The inland sea, a barrier to wild plants, has been a means of dispersal and a bond of union for plants of established cultivation (cf. maps). It is à propos of this dispersal that we must consider shifting centres of diversity.

Many of the staple crops of the modern temperate world show, according to Vavilov's latest findings, a series of centres of diversity (with their own characteristic varieties) extending from Afghanistan or Persia to the Mediterranean or Abyssinia. When we compare this situation with what we find in modern crop plants, whose diversifications we have been able to follow with historical accuracy, a simple explanation comes to light. The centre of diversity of many of these crops has shifted. There has not been one region of hybridisation and selection but a series, sometimes simultaneous, sometimes successive.

[redacted] [redacted]

All ancient empires were closely bound up with their own staple crops. The Bronze Age divided mankind into regions and cultures of silk, cotton and linen. Later, Magna Graecia has been said to have been limited by the Olive, while other cultures have carried, or been carried by, Maize and Rice, the Soya Bean, the Cocoanut and the Date. Later still, two synthetic cultures arose capable of generally acclimatising, hybridising and establishing temperate cultivated plants. These were the Persian and Roman Empires. It is in the replacement of the one by the other that the basis of one of the chief shifts in diversity is to be sought (Table 2).

TABLE 2.—SHIFTING CENTRES OF DIVERSITY
(*conjectural before* A.D. 1500)

	B.C.	A.D.	A.D.
Prunus persica : Peach	800 China	400 Roman Empire	1944 Eur.—U.S.A.
Brassica oleracea : Cabbage	400 Persian Empire	400 ,, ,,	1944 ,, ,,
Allium cepa : Onion	400 ,, ,,	400 ,, ,,	1944 Eur.—Med.
Beta vulgaris : Beet	400 ,, ,,	400 ,, ,,	1944 Europe
Linum usitatissimum : Linseed	400 ,, ,,	400 ,, ,,	1944 ,,
Vicia faba : Broad Bean	400 ,, ,,	400 ,, ,,	1944 Britain
Pisum sativum : Pea	400 ,, ,,	400 ,, ,,	1944 Europe
Cicer arietinum : Chickpea	400 ,, ,,	400 ,, ,,	1944 Med., India
Prunus domestica : Plum	400 ,, ,,	400 ,, ,,	1944 England
	A.D.		
Lactuca sativa : Lettuce	400 Roman Empire	1400 Europe	1944 Eur.—U.S.A.
Solanum tuberosum : Potato	1500 Peru		1900 N.W. Europe
Lycopersicum esculentum : Tomato	1500 ,,	1900 Europe	1940 U.S.A.
Dahlia variabilis	1789 Mexico	1850 W. Europe	,, ,,
Fragaria : Garden Strawberry	1795 Brittany	1844 England	1944 U.S.A.
Brassica : Swede-Turnip	1686 Bohemia	1844 S. England	1944 various
Primula sinensis	1821 Canton	1910 Cambridge	1930 Merton

The reason for shift in the centre of diversity in these examples is a shift in the centre of greatest cultivation—as a rule followed by further hybridisation, further variation and further improvement by selection. The regular difference noted by Vavilov in the types of crop which have inherited the Persian Empire and those which have inherited the Roman Empire has no doubt arisen in this way. In the Mediterranean the flowers and seeds of the cultivated grains, legumes and flax are larger than in the Perisan region. Often, as in the lentil, *Lens esculenta*, the larger Mediterranean forms may well have arisen through the convergence, hybridisation and selection in ancient Egypt of stocks of Persian and Abyssinian origin (cf. Sturtevant 1919).

Improvement by selection in the Roman Empire is scarcely a hypothesis. Virgil (Georgics, I. 201) points out that crops degenerate without selection of seed by hand, and every year: "ni vis humana quotannis maxima quaeque manu legeret." It is on account of these secondary Mediterranean improvements that to-day in the Dravidian languages of southern India the term *sheema* (western) is still used to specify the larger-fruited varieties of crop plants.

Another result of shift is found when merely the natural conditions change. Archaeology and botany agree in placing the origin of the bread wheats in Syria or Asia Minor. The centre of diversity, however, now stretches across Persia to Afghanistan. Here the migrating cereal has struck the greatest climatic diversity and geographical sub-division. Here, therefore, the stock of bread wheat has developed its diversity by natural selection.

The history of beets and mangolds is equally clear in principle. They spring from a complex of inter-fertile forms known under several species names and distributed along the shores of Europe and Western Asia. Assisted by their habit of wind pollination, crossing between wild and selected forms must have frequently and imperceptibly enriched their variability and varied their selection as the cultivated stocks have migrated from the Caspian to the Baltic under successive empires and civilisations (cf. Rasmusson, 1932; Zossimovich, 1939).

Cherries and currants, lettuces and rhubarb have probably followed this European pattern. But there are also world travellers. Such is the many-named pea-nut. From Brazil it went to Peru long before the conquest. Thence it was carried to Africa and India by the Portuguese and to the Phillipines by the Spaniards. In all these places it became readapted and specialised and from all of them returned again, with the slaves and after them, to Tropical America and the United States where its new variants have been recombined and their progeny reselected.

Migrational types of development are thus historically unquestionable. Their genetic significance is also unquestionable. Movement has a snowball effect on variation, the snowball being the variants that are collected by hybridisation and selection on the track of the migrant. Later we shall see just what these variants are. We must remember, therefore, in all these enquiries that our species names are true as representing not the fixed types known to systematics but rather the changing conglomerations of systems of diversity known to genetics. This situation has not the formal simplicity with which Vavilov has endowed it. Nevertheless his centres of diversity remain *centres of development*. As such they concern us deeply. For if they do not reveal all the past they nevertheless promise a large part of the future.

3. *EVOLUTION BY CULTIVATION*

The second principle extensively demonstrated by Vavilov's work is no less illuminating. It is the principle of natural or unconscious selection in cultivation. Certain processes of selection seem to be inherent in the cultivation of the annual crop plants on which the beginnings of agriculture must have been based, as follows :—

1. *Tillage conditions* lead to the selection of larger forms, often polyploids, which can compete favourably with earlier forms on arable land with higher nutrition. This effect must be more rapid with certain crops which, as we shall see, arise secondarily as weeds of the primary crops.

2. *Sowing conditions* lead to the selection (*a*) of forms with even and rapid germination: this appears especially from comparison of cultivated and wild forms of hemp and of various Cruciferae and Solanaceae, and (*b*) of forms lacking special mechanisms of natural seed distribution and implantation, such as the awns of grasses, which have no further use.

3. *Harvesting conditions* lead to the selection of forms with non-dehiscent fruits, as in hemp, flax, and the opium poppy. In the cereals this often involves two changes: a toughening of the rachis, and a loosening of the grain from the glumes or hull, so that it escapes easily in threshing.

These processes were dominant, Vavilov supposes, in a neolithic, mountain stage of early cultivation. How they worked may be seen from the examples of the wheats. The *Triticum* species from which these grain crops are derived fall into three groups according to their chromosome numbers, 14, 28, or 42, the last having been preserved only by cultivation. The stages of selection can be represented by a simplified arrangement of the species (Table 3).

TABLE 3. EVOLUTION OF THE WHEATS (*TRITICUM*)

Series	WILD TYPE: Brittle Rachis, tough awned Glumes	FIRST STEP: Rachis less brittle	SECOND STEP: Rachis tough, Glumes loose and often awnless
Diploid $2x=14$	*aegilopoides* (Asia Minor)	*monococcum* (relic)	—
Tetraploid $4x=28$	*dicoccoides* (Syria)	*dicoccum* (relic)	*turgidum* *polonicum* *durum* (Mediterranean)
Hexaploid $6x=42$	—	*spelta* (relic)	*sphaerococcum* *compactum* *vulgare* (Persia and Afghanistan)

Historical, geographical and chromosome evidence do not, of course, suggest that the development has been from one species now living to another. The species remaining merely show us the stages we expect to find, and we find these stages in the different chromosome series.

The importance of natural processes of selection again appears in the replacement of many crops by their own weeds as cultivation spreads into country less favourable to the primary crop as follows :—

PRIMARY CROP	SECONDARY CROP	ORIGIN AS WEED
Triticum vulgare	*Secale cereale*	S.W. Asia
Hordeum vulgare & *Triticum dicoccum*	*Avena sativa* [1]	Europe and W. Asia
Linum usitatissimum	*Eruca sativa*	C. Asia
	Camelina sativa	Transcaucasia
	Spergula linicola	,,
	Brassica campestris	,,
Fagopyrum esculentum	*F. tataricum*	Altai
Cereals	*Vicia sativa* etc.	S.W. Asia
	Pisum arvense	
	Coriandrum sativum	Transcaucasia
	Cephalaria syriaca	Asia Minor
Various crops	*Cucumis trigonus*	Turkestan
	Abutilon avicennae	Med.—China

Again there are many dunghill plants whose habitat, of course, favours their becoming accidentally cultivated. Such are *Hordeum spontaneum*, *Aegilops cylindricum*, *Avena fatua*, *Ervum orientale*, *Cucumis trigonus*, *Daucus carota*. Similarly, tomatoes, potatoes and hemp naturally follow settled human habitation. Thus, as Vavilov says, man took in most cases what was offered him.

Just as secondary crops follow primary crops so secondary uses follow primary uses. Hemp was first grown for its seeds, secondly for its fibre, and last of all (with advancing civilisation) for oil and for a drug. Such a transition is often favoured by migration, for fibre-flax gains on linseed as the crop moves northward.

Yet another consequence of the natural process of cultivation which is expected on Vavilov's analysis is that the cultivated forms of a species should sometimes have extinguished their wild progenitors. Their rapid development during 10,000 years has coincided with a vast change in the ecological conditions and genetic relationships of their wild ancestors and indeed of the whole flora. The extinction of wild ancestors, or rather the occurrence of complete domestication, is frequent and agrees with Darwin rather than with De Candolle.

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[1] As Virgil says (Georgics, I, 153) :

interque nitentia culta
infelix *lolium*, et steriles dominantur *avenae*.

Even in the ornamental plants which are man's most recent discoveries we find that the wild ancestors have sometimes disappeared, e.g. the garden tulip and perhaps the Chinese primrose, where the sudden changes of hybridisation and polyploidy seem to be excluded.

In a word Vavilov's collections and comparisons reveal in every direction the importance of natural selection working on cultivated plants in their artificial conditions, working untended and even unobserved by man.

But, before selection can act, variation must be present for it to act on. There is a fourth set of conditions which has affected the origin of variation in cultivated plants. These are the conditions of fertilisation referred to by Mendel. Here again we see the accidental, but none the less regular, nature of the effects of cultivation. The changes of habitat it brings with it are liable to change the breeding habits of plants in the following ways :—

1. *Inbreeding replaces Outbreeding.* The absence of pollinating insects in a new environment leads a normally crossing plant to fertilise itself. Tomatoes which cross freely in their native tropics (according to Dr. Harland) are compelled to self in England. In these circumstances any change that assists self-fertilisation is itself favoured by selection. Sometimes genetically self-fertile variations are selected in self-sterile species, e.g. in the plums. Sometimes variations of flower-shape are selected which favour self-fertilisation, e.g. a short style in tomatoes and black-currants (Crane, unpub.). And again in heterostyle plants the slight capacity of the pin-type to fertilise itself is developed by selection, e.g. in *Primula sinensis*, in the 120 years since it was introduced into England (Mather and De Winton, 1941).

2. *Outbreeding replaces Inbreeding.* Strange species are brought together and permitted to cross, especially when flowering times are changed, e.g. in strawberries and roses, chestnuts and grasses.

Again, unfavourable conditions lead to male-sterility which reverses the first change and compels a normally selfed plant to cross, e.g. in cereals, and in tomatoes (Crane, unpub.).

3. *Secondary Changes.* Often in species crosses, triploids alone are viable, e.g. in larch, raspberry, celery, sow-thistle, collinsia, sugar-cane and rye-grass. Contrariwise, on self-fertilisation, self-incompatible diploids will give only triploid progeny, e.g. in tulips and pears (Lewis, 1943). Unreduced gametes are thus favoured wherever an obstacle is placed in the way of the normal process.

Again, wherever vegetative propagation is possible new triploids are selected for food or ornamental plants, as much on account of their seed sterility as of their vigour, e.g. banana, citrus, tea, white mulberry, flowering cherries, tulips and even apples. And in roses seed sterility increases vitamin C content in the fruit (Gustafsson and Schröderheim, 1944). On the other hand, of course, triploidy is never established in seed crops, cereals, cotton, coffee and so on.

All these conditions modify or even reverse the character of the breeding system. Such changes produce new variants by combination or segregation and also upset the general polygenic adaptation of the species or group (Mather, 1943). And those conditions that favour hybridisation and polyploidy conduce in turn to more hybridisation and more polyploidy. Finally, as in sugar cane and *Citrus*, some form of apomixis may bring the story to a close by stopping the recombination and segregation on which the whole development has depended.

In short, the method of reproduction of crop plants, whether self- or cross-pollinated, or vegetatively or subsexually propagated, and the extent to which these methods have been altered by acclimatisation, have determined the conditions of their variation while the processes of cultivation have altered the conditions of selection. And it is these concealed conditions, not the obvious and inherent effects of nutrition under cultivation, which have directed the development of cultivated plants. Only recently has a new factor come into play.

4. *THE INVENTION OF PLANT BREEDING*

During the eighteenth century a new method began to transform the still primitive world of cultivated plants. The haphazard mixture of conscious and unconscious processes, which had in 10,000 years yielded the vast improvements that we can infer, began to give place to systematic selection and large-scale propagation. The firm of Vilmorin, established in 1727, began the work, continued by seedsmen ever since then, of replacing mixed, unselected, land races by standardised, selected, and inbred " varieties " of crop plants. Later, the knowledge of the nature of the sexual process in plants promising, as it did, advances analogous to those achieved by selective breeding in animals inspired Louis de Vilmorin, Thomas Andrew Knight and their contemporaries to make far-reaching experiments in selection and even hybridisation of crop plants.

The replacement of accident by planning is seen most clearly in the strawberry. In 1790, plants of *Fragaria chilöensis* were fertilised in Brittany with pollen of *F. virginiana.* This accident happened simply because the *chiloensis* plants were male sterile. Only a few years later, Keen in England was crossing and selecting their derivatives deliberately in order to produce what we know as the modern strawberry of cultivation.

In the nineteenth century this revolutionary change invaded all the chief crop plants of temperate climates. The heterogeneous natural populations of primitive agriculture were replaced over a large part of the earth by homogeneous standardised varieties, often varieties closely related to one another. Nature gives an example of what happens in such circumstances. Vegetatively and apomictically reproduced species are continually arising especially by polyploidy. Only rarely, however, do they establish themselves and their success is usually short-lived. The heterogeneous sexually reproducing population always has a chance of partially surviving the attacks of disease. And the survivors will be selected for resistance. The homogeneous population, on the other hand, whether sexual or clonal, is liable to be wiped out entirely. Its stability, if not its uniformity, condemns it. The rigour of one selection precludes the possibility of another. Thus as soon as the perfect variety is produced, whether wheat or oats, banana or potato, it is exposed to the attacks of highly adaptable and rapidly evolving insect, fungus and virus pests, attacks which it is unfitted to sustain.

The same principle applies to cold-resistance. But these intermittent dangers present only one aspect of the consequences of altering and specialising the method of selection of crop plants. For the breeding system is also altered with entirely different, but equally dangerous, consequences. Thus the pre-eminence of a few selected clones of self-incompatible fruits like plums and cherries has led to the large scale multiplication of single varieties or groups of closely related and inter-incompatible varieties. This has resulted not in death but merely in sterility, for which correct inter-planting provides the cure. But inter-planting in turn requires that new and genetically appropriate varieties shall be continually supplied by the plant-breeder (cf. Crane and Lawrence, 1938).

Thus when the natural population and natural selection are abandoned they have to be replaced, not by an isolated act of selection, but by a permanent process of plant breeding, involving acclimatisation, hybridisation and selection, involving indeed the utilisation of the whole apparatus of genetics and cytology.

The effect of these successive changes on cultivated plants in the world at large has been to produce a state of confusion. The problems of different crops are inherently different. But in addition, for the various kinds of crop, plant-breeding has reached different stages of development even in the same country. We have to recognise that with many of the newer crops of tropical countries such as rubber, palm nuts and even cocoa we are still at an early primitive stage with vast possibilities of hybridisation, selection and standardisation. With others again, such as tea, coffee, and cotton we are at an advanced, and even the most advanced, stage. Again, we must notice that in regard to forest-tree breeding in some countries, such as Sweden and the United States, a middle stage has already been reached, where hybridisation, acclimatisation and selection have been carried on with rapid and revolutionary effect. In Britain, on the other hand, an interesting condition obtains where forest-tree seed is purchased by the species and by the bushel. The quantity of seed is thus the unconscious object of selection, and not, as one might expect, the quantity or quality of the timber. It is for this reason that our state forests present us with something, for the first time, consistently worse adapted than the natural populations cultivated by backward peoples. Thus, having seen *positive* selection in its various stages of development, we are now able to see *negative* selection in the only stage in which it is likely to appear.

II. INTRODUCING THE CHROMOSOMES

We have already seen how chromosome numbers can be used in such a genus as *Triticum* to classify both wild and cultivated forms in genetically valid groups or species.

When Sakamura discovered in 1918 that the wheats fell into three groups according to their ploidy he resolved, and finally resolved, a confusion which, as we saw earlier, had endured for three thousand years. In the same way when Karpechenko found the three chromosome series in *Brassica*, 8, 9 and 10, the past history and future possibilities of the confused group of cabbages and turnips, swedes and kales became suddenly clear. The reason for this is that different basic numbers and different stages in the polyploid series imply inter-sterility and therefore determine successive steps in evolution. We have now reached a point at which this principle can be universally applied. We can use the study of the chromosomes in finding out how the evolutionary steps have been made. First, in the development of cultivated plants, we find, as Crane (1940) has pointed out, that they have been made in several ways, of which four may now be formally distinguished from examples in our list :—

1. By selection amongst genetic differences existing, or mutations arising, within a single mating group or genetic species :—

Rubus idaeus ($2x=14$) → summer raspberries
Lathyrus odoratus ($2x=14$) → cultivated sweet pea
Pisum arvense ($2x=14$) → *P. sativum*
Linum usitatissimum ($2x=30$) → linseed → flax
Beta maritima ($2x=18$) → garden beet
→ mangold
→ sugar beet
Euchlaena mexicana ($2x=20$) → cultivated teosinte
→ *Zea mays*

2. By polyploidy within such a group, giving reduced seed fertility :—

(*a*) AUTO-TRIPLOIDY

Citrus aurantifolia ($2x=18$) → seedless Tahiti lime
Chrysanthemum frutescens ($2x=18?$) → marguerite
Pyrus malus ($2x=34$) → Blenheim Orange, 1800, etc.
Tulipa gesneriana ($2x=24$) → Zomerschoon, 1600, etc.
Musa sapientum ($2x=22$) → Gros Michel, ancient
Colocasia ($2x=28$) → Taro yams

(*b*) AUTO-TETRAPLOIDY

Vitis vinifera ($2x=38$) → Muscat gigas grape, 1900, etc.
Primula sinensis ($2x=24$) → giant forms, *c.* 1900
Pyrus communis ($2x=34$) → Double William, 1935, etc.
Summer raspberries ($2x=14$) → autumn raspberries, 1917

(*c*) SUCCESSIVE

Hyacinth orientalis ($2x=16$) → Grand Maître, 1870, $3x$
→ modern varieties, $2x$-$4x$
Populus tremula ($2x=38$) → gigas clones, 1936, $3x$
→ seedlings, 1940, $2x$-$4x$
Ananas commosus ($2x=50$) → pineapples, $4x$ → $3x$

3. By selection amongst segregates after crossing between two such groups :—

(*a*) BOTH PARENTS DIPLOID

Ribes vulgare × *R. petraeum* × *R. rubrum* ($2x=16$) → red currants, before 1600
Petunia axillaris × *P. integrifolia* ($2x=14$) → garden petunia, 1834

Streptocarpus rexii × *S. parviflora* × *S. dunnii* ($2x=32$) → garden streptocarpus, 1890

(*b*) Both Parents Polyploid

Fragaria virginiana × *F. chilöensis* ($8x=56$) → garden strawberries, *c.* 1790

4. By polyploidy following such crossing (cf. Darlington, 1937):—

(*a*) Two-sided Doubling

Aesculus pavia ($4x=40$) × *Ae. hippocastanum* ($4x=40$) → *Ae. carnea* ($8x=80$), *c.* 1800
Spartina stricta ($8x=56$) × *S. alterniflora* ($10x=70$) → *S. townsendii* ($18x=126$), *c.* 1870
Phleum pratense ($2x=14$) × *P. alpinum* ($4x=28$) → American timothy, ($6x=42$)
Nicotiana sylvestris ($2x=24$) × *N. tomentosa* ($2x=24$) → *N. tabacum* ($4x=48$)
Brassica oleracea ($2x=18$) × *B. rapa* ($2x=20$) → swede or rutabaga ($4x=38$), *c.* 1680
Triticum turgidum ($4x=28$) × *Aegilops speltoides* ($2x=14$) → *T. spelta*, *T. vulgare* etc. ($6x=42$)
Prunus divaricata ($2x=16$) × *P. spinosa* ($4x=32$) → *P. domestica* ($6x=48$).
→ *P. insititia* ($6x=48$)

(*b*) One-sided Doubling

Delphinium nudicaule ($2x=16$) × *D. elatum* ($4x=32$) → *D.* "*ruysii*" ($4x=32$) 1929
Rubus idaeus ($2x=14$) × *R. ursinus* ($8x=56$) → loganberry ($6x=42$), 1880
Rubus rusticanus inermis ($2x=14$) × *R. thyrsiger* ($4x=28$)
→ John Innes Berry ($4x=28$)
→ Merton Thornless, 1935
Saccharum officinarum[1] ($8x=80$) × *S. spontaneum* ($8x=64$)
→ Coimbatore Cane, Co 205 ($12x_2=112$), 1916
Saccharum officinarum ($8x=80$) × *S. spontaneum* ($12x=112$)
→ Kassoer Cane, nat. hybrid ($14x_2=136$)
Saccharum officinarum ($8x=80$) × Kassoer cane ($14x_2=136$)
→ P.O.J. Cane ($15x_2=148$), 1910

This classification is, of course, misleading unless it is understood to be diagrammatic. The more recent cases are precise and authentic, the more remote, approximate and hypothetical. The distinction between *Ribes* and *Beta* is, from what we saw earlier, arbitrary. The *Triticum*, *Prunus*, *Brassica* and *Nicotiana* cases are attempted reconstructions of an earlier origin. But in one principle they are equally correct: they show the different processes by which variability has been released and exposed to selection. With the species crosses we have summarised, this release occurs in two ways subject to the number and relationship of the chromosome sets concerned :—

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[1] $x=8$ and 10, cf. Section III.

1. *Primary Segregation :* from pairing of chromosomes of opposite parents, e.g. in a diploid cross between two diploids.
2. *Secondary Segregation :* from pairing of chromosomes within the complements of one or both polyploid parents in their offspring.

Thus, where no doubling has taken place, AABB × CCDD will give a hybrid ABCD which will produce gametes either by A—C and B—D pairing (primary segregation) or by A—B and C—D pairing (secondary segregation). The relative importance of the two types of segregation differs in different tetraploid crosses (Darlington, 1928).

Where doubling of the chromosome number has taken place on both sides, i.e. after crossing, segregation of both kinds is more or less suppressed; every chromosome has an identical partner and, so far as it regularly takes this partner, the new form is fertile and true-breeding. Perfect stability is never attained, however, in practice; new polyploids and new crosses between polyploids always release some unexpected variability—unexpected if we have not studied their chromosome behaviour at meiosis.

With one-sided doubling an intermediate segregation takes place. Thompson and others (1943) and Zhebrak (1944) have produced bread wheat types as above by two-sided doubling, but doubling on one side might be even more effective. Thus we might suppose that if the cross *Triticum dicoccum* (AABB) × *Aegilops ovata* (CCDD) had doubling on the *Triticum* side it would give a hybrid AABBCD which might well be the type of ancestor of the hexaploid wheats. C and D will segregate to give a variety of forms or species with every new combination of 7 chromosomes combining the properties of C and D and capable of surviving in the homozygous state. Thus various methods of origin may be, and several probably have been, responsible for the interfertile hexaploid complex of wheat species.

A description in terms of formal species names and a single process is likewise misleading as applied to the origin of the sugar cane. Here we are concerned with a complex of wild forms of *Saccharum* with chromosome numbers between 48 and 112, classified under the names *spontaneum* and *robustum* and distributed between Turkestan and Polynesia. These forms, by selection for size and sugar content, and of course increase of chromosome number, have given rise to the cultivated species called *barberi* in India, *sinensis* in China, and *officinarum* in Java and the Pacific. In recent years these have all been crossed together and with the wild forms and, with further increase in chromosome number, have finally given us the prodigies of Passeroën and Coimbatore.

In all these descriptions we have therefore to remember the genetic diversity that may be covered by a species name. We have to know what kind of mating method, chromosome organisation and internal discontinuity may be concealed by that name. In these circumstances we are bound to relate the kind of origin or development (single or multiple, sudden, gradual or successive) and the kind of variability (high or low, continuous or discontinuous) with the hybridisation and polyploidy which chromosome studies can reveal. We are bound to attribute the invariability of *Morus nigra* as compared with *Morus alba* not, as De Candolle did, to its newness in cultivation but rather to its high allopolyploidy. On the other hand, the great variability of *Prunus laurocerasus* we are bound to attribute to its high autopolyploidy rather than to any antiquity in cultivation.

One major difficulty is left. Why is it that, apart altogether from hybridity and polyploidy, one species is variable and another invariable? Why even do we find that in the sweet pea, for example (Crane and Lawrence, 1938) about 1890, a stock which had scarcely varied for 200 years suddenly began to vary? The answer begins to appear. We know that the vigour of the plant, the internal organisation of its nucleus, its nucleic acid metabolism, and its liability to both gene mutation and chromosome breakage are interdependent and all of them are subject to genotypic control and variation. We know also that two parts of the chromosomes may often be sharply distinguished, *heterochromatin* which remains condensed in the resting nucleus, and *euchromatin* which uncoils and is apparently fully employed in the work of protein production. The visible proportion of euchromatin to heterochromatin is highly variable between species and between individuals, and is subject to selection. Sometimes extra fragments which may be largely heterochromatic are preserved by this selection in cultivation in spite of their having no regular pairing at meiosis. Such fragments occur in maize, rye, *Sorghum*, *Fritillaria* and *Tradescantia*, and probably also in many other species whose fluctuating numbers have been noted in our list. They evidently affect both the vigour of growth and the stability of mitosis (Darlington, 1942).

In primitive stocks of maize Longley (1938) found that heterochromatin on the major chromosomes diminishes as we move north and east from the centre of dispersal in Mexico ; at the same time the frequency of extra heterochromatic fragments, " B chromosomes," increases. Here is a new cytological development of Vavilov's method with notable implications for plant breeding. Increase of heterochromatin, either inside the ordinary chromosomes or in special extra fragments, has seemingly been selected in many diploid species as a means of rapidly increasing the vigour of growth, a means alternative to polyploidy.

In the coming years these newer considerations will be combined with the application of Vavilov's methods in unravelling the past. They can, however, at once be applied to creating the future. To do this we have to combine our genetic interpretation with the use of new cytological techniques. These have been described in a companion volume which attempts to show how chromosome numbers can be changed by the techniques of colchicine, X-rays, and temperature shocks. These new methods give us some control of cell processes. Mitosis can be stopped, meiosis frustrated, and fertilisation either prevented where it is inconvenient or accomplished where it seems impossible. To obtain his results the plant breeder need therefore no longer wait upon rare accidents; but if he is to avoid proceeding on wrong courses he must first consider the chromosome numbers of his plants and what they mean.

III. THE USE AND MEANING OF CHROMOSOME NUMBERS

In our list we have shown, so far as possible, their wild relatives as well as the cultivated species themselves. We need to know both if we are to cross the different stocks or species. Species with the same number cross most readily. And when the cross is made the numbers tell us whether the cross will be triploid and sterile, tetraploid and fertile, or diploid and capable of becoming tetraploid. But the comparison of related groups has another use. It shows the long-term processes involved, and these are important because what has happened long ago may happen again. The principles to be inferred may be summarised as follows :—

1. Related forms usually arrange themselves in polyploid series with chromosome numbers that are multiples of a common *basic number*, x: diploid $2x$, tetraploid $4x$, hexaploid $6x$ and so on. These series evidently arise with high frequency since they often appear within a single morphological species splitting it up into several potential new species. These are genetic species. They are genetically isolated from one another more strictly than are distinct morphological species with the same ploidy. Morphological grouping thus points backwards, chromosome grouping points forwards. Polyploid series are evidently, as a rule, short-lived, inasmuch as differences of ploidy distinguish species within a genus more often than genera within a tribe or tribes within a family. In general, the polyploid, and to an even greater extent the apomict, is exploiting a momentary advantage at the expense of its long-term adaptability. Hence its short-term value in plant

breeding. Many large genera like *Antirrhinum* and *Ribes*, *Quercus* and *Aloë*, show no natural polyploidy.[1]

2. The basic number may be constant for a whole tribe (Gramineae), subfamily (Rosaceae), or even family (Rutaceae or Myrtaceae). A common basic number may even transgress families, e.g. the 7-12-19 grouping of the early Dicotyledons, the 11 grouping of the Polygonaceae and Cynocrambaceae. It may, however, change more frequently and serve to distinguish species, as in *Crepis* and *Crocus*, or subspecies as in *Vicia*. It may go by single steps 7-8-9 or by jumps like the 7-12 of *Cucumis*, where the intermediate steps have been lost and where, as Darwin noted, complete genetic isolation follows.

3. Neither of these changes occurs regularly in time, so that neither is a criterion of the systematic importance of the groups it separates. In frequency they seem to be negatively correlated within groups, those with the most unstable basic numbers showing the least polyploidy. The two changes are thus alternative means of variation. An upward limit to chromosome numbers is set by the size of the cell in relation to that of the chromosomes. Small chromosomes are always found in hard woods usually with a high basic number.

4. Many genera contain groups of species with differences of basic numbers which conveniently subdivide them; they are polybasic. Crosses between species with different basic numbers then can give dibasic or even tribasic polyploids from which new species arise on the following pattern :—

> *Brassica oleracea* ($2x=18$) × *B. napus* ($2x=20$) = Swede group ($4x=2x_2=38$), *Narcissus juncifolius* ($4x=28$) × *N. tazetta* ($2x=22$) = *N. dubius* ($6x=2x_2=50$).

In this way new secondary and tertiary basic numbers, x_2

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[1] Pollen grains of herbarium specimens can be used to identify polyploids. Size alone is a test in *Quercus* (H. J. Sax, 1933a), *Allium*, *Triticum*, *Euphorbia* and *Rosa* (cf. Darlington, 1937a). Pore number is often a guide where the number is increased from three to four in the tetraploid. Special nuclear conditions can also be revealed by staining the dead pollen (Darlington and Thomas, 1941, on *Sorghum*).

and x_3, are created such as we find in *Viola* and *Veronica*, *Papaver*, *Saccharum* and *Crepis*.

In other genera, like *Rosa*, satisfactory division into sections is impossible because no genetic barriers exist apart from polyploidy, which removes barriers as easily as it creates them. In others again, as we saw, even polyploidy is absent. And in yet others, basic number and ploidy provide a satisfactory basis of division even when it contradicts the prior morphological treatment.

Outstanding examples in the catalogue are the following :—

Viola
Rumex
Linum
Begonia
Hibiscus
Euphorbia
Astragalus
Scabiosa
Lactuca
Campanula
Nicotiana
Veronica
Streptocarpus
Verbena
Musa
Stipa

5. In determining the basic numbers we meet with difficulties due to the rapidity with which revolutionary changes cover their tracks. For example, in the Maydeae and Andropogoneae 5 occurs with a 10 which shows no trace of polyploidy so that 10 would appear as an original basic number in the absence of the 5. The intermediate 6, 7, and 8 being lacking we incline to assume a tetraploid origin for the 10. On the other hand, in the mechanical and physiological relations of the chromosomes of *Hyacinthus orientalis*, there is no trace of tetraploid origin, although in shape and number they seem too exactly paired to allow of any other interpretation. As in the genuine tetraploid, *Paris quadrifolia*, the nucleolar organisers are two, not four, in number.

6. All polyploids must ultimately spring from diploids. On the other hand, a reversal of polyploidy by parthenogenesis is rarely effective except in high polyploid grasses (*Saccharum*, *Poa*). Basic number, however, may go up or down, its change depends on gain or loss of whole chromosomes, or on fragmentation or fusion which involves gain or loss of parts of chromosomes. Loss must always be more difficult than gain, since the change in balance is more serious. Reduction of number by fusion, however, must be very general. It is most

easily inferred in the large chromosomes of *Fritillaria* and *Lycoris*.

The parts lost in chromosome fusion are probably less specific in their action as a rule and are perhaps to be identified with the fragments frequently recognisable as heterochromatin. It is therefore important to notice that heterochromatin which is very abundant in the diploïd species of *Trillium* and *Paris* is almost entirely absent or invisible in the polyploids. Similarly, supernumerary fragments which are useful but not indispensable occur very widely in diploid species but amongst polyploids only rarely.

7. Small chromosomes arising presumably by fragmentation are of three kinds: (i) New fragments often found, especially in the progeny of triploids or species crosses, which usually are of no value and will soon be eliminated. (ii) Fragments fluctuating in number, and not regularly pairing at meiosis, which are nevertheless preserved in the stock or clone by their selective advantage in the way we have already seen. (iii) Fragments established in the species, e.g. in *Aloë*, *Agave*. These three types of fragment are not always distinguishable from the accounts we have been able to quote in the list. It remains for the future to assess their value and show their relationships.

8. In polyploids whole chromosomes may be added to the complement or taken from it to give secondary polyploids with a new balance and a new basic number. Thus in tetraploid *Dahlia merckii* two chromosomes have been added so that x, which began as 8, has become 18. Similarly, the Pomoideae seem to derive their uniform basic number of 17 from the 7 of *Rosa*. Here obviously the woody plants come from the herbaceous. On the other hand, when the number is doubled or trebled a drop of one is often noted, and either the original diploid or its straight tetraploid or hexaploid derivative has often, perhaps usually, disappeared. This change must, as we saw, be due to loss, whether directly of a whole chromosome or, by fusion, of a part of one. The following examples of gametic numbers show the drop :—

Maydeae: 5-10-9
Cephalaria: 5-(10)-9
Hesperis: 7-14-13, 12
Bulbine: 7-(14)-13
Lepturea: 7-(14)-13
Veronica: 7-21-20
Agrosteae: 7-21-20
Camelina: (7)-14-21-20
Erucastrum: (8)-16-15
Linum: (8)-16-15
Streptocarpus: (8)-16-15
Verbascum: (8)-16-15
Vinca: 8-(24)-23
Agavaceae: 10-(20)-19
Clerodendron: 12-(24)-23
Cytisus: (12)-24-23
Sphaeralcea: 17-(34)-33

This characteristic change is no doubt due to the polyploid being able to afford a loss that would ruin a diploid, and also enjoying an evolutionary advantage from number reduction. The opposite condition of a rise as in *Saponaria*, (7), 14, 15; *Amaranthus*, (8), 16, 17; and *Lavatera*, 7, (21), 22 is much less common.

9. We must suppose that equilibrium has long been reached in the flowering plants between the selectional effects of a short-range ease of increase and of a long range advantage of decrease, i.e. of having fewer linkage groups. The effect of this selective advantage is seen in Gramineae, Compositae and Papiloniaceae. Here the tribes we put first as having the lowest basic numbers are the ones which the systematist puts last as being the most advanced. The rule is, of course, a very rough one since any linear arrangement (however convenient the order may be in treating chromosome numbers) can never correspond with the many-dimensioned processes of evolution resulting from the mutation, recombination and duplication of genes. Nor may we argue the direction of chromosome change in particular instances from the apparent direction of morphological evolution. Primitive forms have not always the earlier numbers. Five is not necessarily, or even probably, the original number of *Crepis* because *C. sibirica* with five, is the oldest-looking species. And the original Angiosperms had not necessarily, or even probably, 12 chromosomes because that is now the commonest number in Gymnosperms. Chromosomes and organisms are two levels of organisation connected by physiology and genetics and only in the simplest cases by arithmetic.

10. Material properties such as the distribution of heterochromatin and the stability of the centromere (the gene which

moves the chromosome) undoubtedly condition the possible changes in basic number. It is not, therefore, surprising that parallel changes in number occur in related genera in Papilionaceae, Gramineae and elsewhere. Such parallelisms may be due sometimes to misclassification of families, genera or species by systematists, and sometimes to miscounting or mislabelling of species by cytologists. There are obvious instances of all these in the list (as in *Lespedeza*). But sometimes parallelisms must be genuine. Their occurrence, like that of morphological parallelisms, warns us of the danger of relying solely on one method in the ultimate inference of phylogeny. To the tripod of systematics : form, distribution and breeding, we have merely added a fourth foot and we must rest with all four feet on the solid earth. With this safeguard our present provisional arrangement already shows the value that chromosome counts have in clarifying and reconstructing the larger categories, a value which merges with its application to the smaller categories used by the plant breeder.

These are the guiding principles we derive from the list and have used in arranging it. For 30 years cytologists and systematists have been discussing the bearing of chromosome change on classification in particular groups. Now from a summary of the total observations we can get a bird's eye view of the whole process of the evolution of genetic systems in the flowering plants. It is only a bird's eye view, often indistinct and remote, yet already in some sense it shows the plan and proportions of nature.

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EXPLANATION OF THE CATALOGUE

First Column: Systematic Order and Botanical Names

The families of Angiosperms follow the order and bear the numbers of Hutchinson's "Families of Flowering Plants" (Dicotyledons, 1926; Monocotyledons, 1934). 233 out of 332 families are represented. Two exceptions are made to this subdivision. We have, on account of their chromosome affinities, retained the Tribes Allieae and Agapantheae in the heterogeneous Liliaceae. And we have kept the Nolanaceae separate from the Convolvulaceae. We have resisted the temptation, however, to put the Garryaceae back into the Cornaceae. The families of Gymnosperms, taken from Engler and Gilg's "Syllabus der Pflanzenfamilien" (1919), follow our own order, while the Tribes of Pinaceae follow Dr. Hutchinson's unpublished classification. Five large families of Angiosperms we have subdivided into Tribes as follows:—

Cruciferae, after Prantl (Die Natürlichen Pflanzenfamilien, 1897, *et sqq.*).
Papilionaceae, after Taubert, 1894, cf. Willis, 1925.[1]
Compositae, after Hoffman in Engler and Gilg.
Liliaceae, after Hutchinson, 1934.
Gramineae, after Hubbard (unpub.).

A synopsis of the tribes given before each of these families indicates the pattern of variation. The order in which we have taken them generally follows our rule which is to proceed from the lower to the higher basic numbers. Rosaceae, Euphorbiaceae and Scrophulariaceae are also subdivided.

Genera within families or tribes we have likewise, with special exceptions, taken in ascending order of basic numbers. Groups are headed by their basic numbers, primary x_1, secondary x_2.

Individual genera are also subdivided, where necessary, according to basic number and ploidy. The exceptions are certain large genera which have been, in our view, satisfactorily divided into sections on other grounds, e.g. *Prunus*, *Primula*,

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[1] We have put *Abrus* out of the Vicieae into the Phaseoleae, following Senn, 1938.

Crepis, *Bellevalia*, *Tulipa*, *Calochortus* and *Iris*. Genera in which apomixis is known are noted since its occurrence is usually related to ploidy.

Synonyms or old alternatives corresponding to the whole or part of a genus are given in brackets. The name given by the chromosome author may then be either the first or the second. If the second, a more recent authority has been found in Willis, Bailey, Rehder, or the Kew Hand-lists, confirmed sometimes by the chromosome evidence itself. In particular Dr. Hubbard has corrected the whole of the Gramineae in the light of this evidence.

We have not put the conventional × before the name of an alleged hybrid since in our view this usage has no exact meaning without experimental and cytological control. Such forms will always appear in the sixth column as *cult.*

In all, over 11,000 species in 2000 genera are included in the catalogue. About 1000 of the species are still without chromosome numbers, and 2000 are summarised without individual names, owing to their uniformity of number or lack of cultural interest. The remaining 8400 important species are recorded in detail. Some of these have been the subject of extensive study and experiment. The great majority, however, have been examined merely from single and even unrepresentative specimens. The effect is that only a part of the natural wealth of variation in chromosome numbers is now revealed. The rest remains to be discovered.

Second Column: Popular Names

Important economic or decorative species, or their useful products, have been given their popular, vernacular or commercial names, English and American, Spanish and Portuguese, Hindustani and Hottentot. These names often have a priority over the scientific names and may, we fear, often survive them. In some genera, like *Brassica* and *Iris*, where systematics has been defeated by plant breeding, the popular names often alone have any meaning. On the other hand, we have tried (with partial success) to avoid the many bogus popular names given in reference books which are either scholastic translations or attempts to impose botanical rules on the common speech. Secondary or borrowed popular names such as "Papaw" applied in America to the Papaya (*Carica* not *Asimina*) we have placed in quotation marks.

Third Column: Chromosome Numbers

The somatic or "diploid" number, and not the gametic or haploid number, is given in all cases. It varies from 6 to 500, and may have been either directly observed or calculated from observations of meiosis in the pollen or pollen mother cells. Where the author is uncertain we prefix *c.* (circa); where we are uncertain of the number, or of its attachment to the botanical name given, we add a question mark. Where the name seems clearly incorrect we put it in quotation marks or add a query.

The numbers of experimentally produced haploids and polyploids are put in brackets. Extra fragment chromosomes are indicated by *f*.

Fourth Column: Authors

Where two accounts differ in number for the same species we have quoted both, apart from certain ancient errors. Where accounts agree, we have reversed the rule of botanical priority and quoted the last important reference, since from this the earlier sources can usually be obtained.

Previous summaries of chromosome numbers are referred to by the following initials as abbreviations :—

Gaiser : G. 1926, 1930 (general).
Ishikawa : I. 1916 (general).
Kihara *et alii* : K. 1931 (Japanese cultivated plants).
Löve and Löve : L. & L. 1942 (Scandinavian Flora).
Matsuura and Suto : M. & S. 1935 (personal counts).
Maude : M. 1939 (British Flora).
Sokolovskaja and Strelkova : S. & S. 1938, 1940, 1941.
Tischler : T. 1922, 1926, 1931, 1936, 1938 (general).

Most of these lists contain otherwise unpublished information, and Tischler's lists are an invaluable catalogue of nearly all numbers published up to 1937.

In addition, we are indebted for some 75 unpublished counts to our colleagues Dr. H. N. Barber, Dr. P. C. Koller, Mr. L. F. La Cour, Mr. W. J. C. Lawrence, Mr. S. H. Revell, Dr. P. T. Thomas and to many correspondents. Some 150 unpublished counts by Dr. Janaki Ammal are initialled E.K.J. These are chiefly grasses and the neglected economic plants of the tropics.

Fifth Column: Uses of Plants

The known or supposed uses of all the more useful plants are summarised and, even when their chromosomes have not been counted, in order to indicate the important gaps in our knowledge, we have included them in the catalogue. We should have liked to include a similar classification for habits and reproductive methods but this must be left out at present. In preparing the catalogue of uses we have chiefly relied on the following valuable works :—

L. H. and E. Z. Bailey : Hortus Second (1941), New York.
I. H. Burkill : A Dictionary of the Economic Products of the Malay Peninsula (1935), London.
K. L. Dey : Indigenous Drugs of India (1896), Calcutta.
J. H. Holland : Overseas Plant Products (1937), London.
H. F. Macmillan : Tropical Gardening and Planting (1925), Colombo.
G. Nicholson : Illustrated Dictionary of Gardening (N.D.), London.
A. Rehder : Manual of Cultivated Trees and Shrubs (2nd Ed. 1940), New York.
H. C. Sampson : Cultivated Crop Plants of the British Empire, etc. (1936), Kew Bulletin of Miscellaneous Information, Add. Series XII.
P. de Sornay : Green Manures and Manuring in the Tropics (Trans. Flattely, 1916), London.
E. L. Sturtevant : Notes on Edible Plants (1919), Albany, N.Y.
J. C. Willis : A Dictionary of Flowering Plants and Ferns (5th Ed. 1925), Cambridge. 6th Edn 1931. Reprinted, 1948

We have been kindly allowed the use of a corrected copy of the Guide to the Kew Museums of Economic Botany. In addition we have used various special works and nurserymen's catalogues.

The following initials show our classification of uses :—

A	*Alcoholic Liquors*, produced by fermentation (barley for malting, grapes for wine, cocoanut sap for arrak).
B	*Beverages*, produced by infusion (tea, coffee, cocoa).
C	*Carnivorous Plants* (Droseraceae, Sarraceneaceae).
D	*Dyes* and *Tannins* (indigo, madder, annatto, cassia, wattle, oak bark).
F	*Fruits*, edible by man (apple, mango, orange, banana, lichi, fig, melon, tomato, date palm).
Fs	*Stocks* for fruit and flowering trees (*Atalantia*, *Crataegus*, *Prunus*, *Rosa*).
Fo	*Fodder*, green for cattle, sheep, elephants, etc. (grasses, legumes, roots and trees).
Fo$_1$	*Fodder*, for insects (mulberry and *Ricinus* for silkworm, *Opuntia* for cochineal, *Cassia* for shellac insect).
G	*Grains* and *Pulses* for cattle and man (cereals and legumes, buckwheat).
H	*Horticultural Plants*, grown for decoration, instruction, experiment, protection, curiosity or religious edification. Including hedge-plants and lawn grasses.
I	*Insecticides* and *Vermifuges*, for infusion or dusting (nicotine, derris, *Pyrethrum*, santonine).
M	*Medicinal Plants*, drugs and poisons including fish-poisons (cascara, quinine, cocaine, nux vomica, hemp).
Ma	*Green Manure*, chiefly leguminous crops.
N	*Nuts*, edible by man (walnut, chestnut, cocoanut, pistachio).
O	*Oil Seeds* and *Waxes* (linseed, sunflower, rape, cotton-seed, castor oil, sesame, palms).
P	*Perfumes* and *Essential Oils*, naturally volatile (rose, violet, jasmine, lavender, sandalwood, eucalyptus, lemon-grass).
Par	*Parasites* and *Semi-Parasites* (Orobanchaceae, Mistletoe, sandal tree).
R	*Roots*, *Tubers* and *Bulbs*, edible or extractable (potato, turnip, radish, arrowroot, tapioca, yam).

Re	*Resins*, extracted from trees (damar, copal, mastics, balsams, frankincense and myrrh).
Ru	*Rubber* from latex of roots or stems (Euphorbiaceae, Compositae, Asclepiadaceae, Apocynaceae and Sapotaceae).
Sb	*Sand-Binders* (bindweeds, grasses and trees).
Sh	*Shade Trees* for parks, avenues, nurseries and plantations (*Grewellia*, *Erythrina*, *Ficus*, *Eucalyptus*, *Cedrus*).
Sp	*Spices* and *Condiments* (peppers, cinnamon, cloves, ginger, herbs of Umbelliferae, Labiatae and Compositae).
St	*Starch*, extracted from stems (*Caryota*, *Cycas*).
Su	*Sugar*, extracted from stems or roots (sugar-cane, sugar-beet and palms). Also sweeteners (liquorice, etc.).
T	*Textile Fibres*, for weaving fabrics, carpets, mats, baskets, ropes, and cords and for paper-making and thatching (cotton, jute, hemp, raffia, bamboo).
To	*Tools :* weapons, vessels, pipes, strainers, cleaners, beads, made directly from fruits and stems (gourd, lufa, bamboo, teasel, *Coix*).
V	*Vegetables*, green crops and salads, not roots (cabbage, celery, lettuce, cucurbits).
Vit	*Vitamin C* sources, fruits and stems (*Actinidia*, walnut, rose, paprika).
W	*Wood*, timber, cork and charcoal-wood trees (Gymnosperms, palms, hardwoods).

Sixth Column : Distributions

The distributions have been taken primarily from the Index Kewensis whose main geographical divisions are shown on the front end-papers. This source has been enlarged and amended in the light of more recent authorities particularly Vavilov (1926, 1935) and Bailey's " Hortus Second " (1941), Laufer's historical " Sino-Iranica " (1919), and special systematic works many of them included in the chromosome studies quoted. The Gramineae have been specially checked by Dr. Hubbard.

We have translated the ancient and modern Latin localities in the Index Kewensis as follows :—

Amphig., Cosmopolitan.
Amphig. Trop., Tropics.
Byzant., S.W. Asia.
Dahuria, Amur.
Ind. or., India (not East Indies).
Masc. Ins. (Mascarene Islands), Madagascar, etc.
N. Granat., New Granada, i.e. Colombia.
Oriens., S.W. Asia (including Nile Delta).
Cilicia, *Galatia*, *Pisidia*, Asia Minor.
Soongaria, Turkestan.
Taurus, Taurus Mountains.

Mistakes have frequently been made in putting these names into English since no one has undertaken to define them and their original meaning is now obscured by the process of time.

Forms labelled *cult* are those effectively distinct from wild species. They are chiefly derived from hybridisation of two or more races or species with later selection and with or without later change of chromosome number.

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We shall naturally be glad to hear from our colleagues (and from reviewers) in all parts of the world of errors, omissions and possible additions, for correction and use in a later edition.

I GYMNOSPERMS

1. CYCADACEAE

CERATOZAMIA $x=8$					
mexicana		16	Resende 1937	H	Mexico
STANGERIA $x=8$					
eriopus (paradoxa)		16	Sax & B. 1934	H	S. Africa
ZAMIA $x=8$					
floridana	Coontie	16	Sax & B. 1934	H	Bah. S. Fla.
media		16	,, ,, ,,	H	W. Indies
chigua		—		N	Colombia
furfuracea	Sago Cycad	—		St	Mexico
integrifolia		—		St	W. Indies
pumila		—		St	,,
tenuis		—		St	Bahamas
ENCEPHALARTOS $x=8, 9$					
altensteinii		16	Sax & B. 1934	H	S. Africa
horridus		18	Resende 1940	H	,,
caffer		—		NSt	,,
BOWENIA $x=9$					
serrulata		18	Sax & B. 1934	H	Australia
spectabilis		—		H	,,
DIOON (DION) $x=9$					
spinulosum		18	Sax & B. 1934	H	Mexico
edule		—		N	,,
MACROZAMIA $x=9$					
miquelii		18	Sax & B. 1934	H	Australia
moorei		18	,, ,, ,,	H	,,
tridentata		18	,, ,, ,,	H	,,
CYCAS $x=11, 12$					
circinalis	Eenthu	22	Sax & B. 1934	HNSt	S.E. As., E. Ind.
rumphii		22	,, ,, ,,	H	Mal., Austr.
revoluta		22	,, ,, ,,		
		22, 24	T. Nakamura 1929	HNSt	S. Japan
MICROCYCAS $x=13$					
calocoma	Corcho	26	Sax & B. 1934	H	Cuba

2. GINGKOACEAE

GINGKO $x=12$					
biloba		24	Sax & Sax 1933	H	E. China

3. TAXACEAE

TAXUS $x=12$					
baccata	English Yew	24	Dark 1932	HW	N. Temp.
	Irish Yew	24	„ „	H	Ireland
canadensis	Ground Hemlock	24+f	„ „	H	N. America
cuspidata	Japanese Y	24	„ „		
		♂ 24? ♀ 26?	M. & S. 1935	HW	Japan
hunnewelliana		24	Sax & Sax 1933	H	*cult*
media		24	„ „ „	H	„
brevifolia	Calif. Yew	—		H	W:N. Amer. = W. of N. America
CEPHALOTAXUS $x = 12$					
fortuni	Ch. Plum Yew	24	Sax & Sax 1933	H	China
PODOCARPUS $x=12, 19, 20$					
falcatus		24	Flory 1936	H	S. Africa
neriifolius		38	„ „	H	Himalayas
macrophyllus		38-40	„ „	H	Jap., China
as *chinensis*		40	„ „	H	„ „
andinus		c. 40	„ „	FH	Chile
dacrydioides	Kahika	—		FH	N. Zealand
spicatus	Black Pine	—		FB	„ „
totara	Mahogany P.	—		F	„ „
TORREYA					
nucifera	Kaya	—		NOW	Japan

4. PINACEAE

TRIBE I: TAXODIEAE

SCIADOPITYS $x=10$					
verticillata	Umbrella Pine	20	Tahara 1937	H	Japan
CRYPTOMERIA $x=11$					
japonica		22	Sax & Sax 1933	HW	„
SEQUOIADENDRON $x=11$					
giganteum	Big Tree	22 (44)	Jensen & L. 1941	W	Calif.
SEQUOIA $x=11$					
sempervirens	Redwood	44	Jensen & L. 1941	W	Calif.
TAXODIUM					
distichum	Bald Cypress	—		H	N. America

TRIBE II: ARAUCARIEAE

TAIWANIA $x=11$					
cryptomerioides		22	Sax & Sax 1933	H	Formosa

AGATHIS $x=13$					
robusta	Queensland K.	26	Flory 1936	W	Australia
alba	Amboyna P.	—		W	Malaya
australis	Kauri Pine	—		W	N. Zealand
ARAUCARIA $x=13$					
bidwillii	Bunya-Bunya	26	Flory 1936	H	Australia
brasiliana	Parana P.	26	” ”	H	Brazil
cunninghamii	Hoop P.	26	” ”	H	Australia
araucana (imbricata)	Monkey Puzzle	—		H	Chile
columnaris	New Caled. P.	—		H	New Caled.
CUNNINGHAMIA					
lanceolata	China Fir	—		H	S.&W.China

TRIBE III : ABIETEAE

PSEUDOLARIX $x=11$					
amabilis	Golden Larch	44	Sax & Sax 1933	HW	China
TSUGA $x=12$					
canadensis	Hemlock	24	Sax & Sax 1933	DW	N. America
caroliniana		24	” ” ”	W	” ”
diversifolia		24	” ” ”	W	Japan
yunnanensis		—		HW	China
ABIES $x=12$					
balsamea	Balsam F.	24	Miyake 1903	HW	N. America
cephalonica	Greek Fir	24	Sax & Sax 1933	HW	Greece
concolor	White Fir	24	” ” ”	HW	N. America
nordmanniana	Caucasian F.	24	” ” ”	HW	Caucasus
veitchii		24	” ” ”	HW	Japan
alba (pectinata)	Silver F.	—		HW	Europe
grandis	Lowland F.	—		HW	W:N. Amer.
lasiocarpa	Alpine F.	—		W	” ”
magnifica	Red F.	—		W	Calif.
nobilis	Noble F.	—		HW	W:N. Amer.
spectabilis	Himalayan F.	—		W	Himalayas
CEDRUS $x=12$					
libanotica (libani)	Lebanon C.	24	Sax & Sax 1933	HW	Syria
atlantica	Mt. Atlas C.	—		HW	Atlas Mts.
deodara	Deodar	—		HMW	Himalayas
LARIX $x=12$					
decidua (europaea)	Common Larch	24	Sax & Sax 1933	HW	Eur., W. As.
eurolepis	Dunkeld L.	24	Sax 1932	W	*cult*
dahurica (gmelinii)		24	Woycicki 1906	HW	Siberia
leptolepis (kaempferi)	Jap. L.	24	Sax & Sax 1933	H	Japan
occidentalis	W. Amer. L.	24	” ” ”	—	W:N. Amer.
polonica		24	Hruby 1933	—	Poland

LARIX (*cont.*)					
sibirica		24	Juel 1900	—	Siberia
sudetica		24	Hruby 1933	—	Europe
decidua × *sibirica*		(36)	Larsen & W. 1938	H	cult.
potaninii	Chinese L.	—		H	China
PINUS $x=12$					
banksiana	Jack Pine	24	Sax & Sax 1933	W	N. Asia
bungeana	Lace-bark P.	24	,, ,, ,,	HW	China
echinata		24	,, ,, ,,	W	N. America
flexilis	Limber P.	24	,, ,, ,,	W	W.N. Amer
jeffreyi		24	,, ,, ,,	W	Calif.
longifolia (*roxburghii*)	Chir P.	24	Sethi 1928	NW	Himalayas
mugo	Mountain P	24	Sax & Sax 1933	—	Europe
murrayana (*contorta*)	Shore P.	24	Langlet 1934	W	W.N. Ame.
nigra (*laricio*)	Corsican P.	24	Sax & Sax 1933	W	S. Europe
palustris	Longleaf P.	24	Mathews 1932	OReW	N. America
parviflora	Jap. White P.	24	Sax & Sax 1933	W	Japan
peuce	Macedonian P.	24	,, ,, ,,	W	Macedonia
pinaster	Cluster P.	24	Saxton 1909	W	Medit.
ponderosa	West. Yellow P.	24	Sax & Sax 1933	W	W.N. Ame
pungens	Table M. P.	24	,, ,, ,,		N. America
resinosa	Red Pine	24	,, ,, ,,	ReW	,,
rigida	Pith P.	24	,, ,, ,,	OReW	,,
sylvestris	Scots Fir	24	,, ,, ,,	StW	Eur., N. Ar
strobus	White P.	24	,, ,, ,,	W	N. Americ
tabulaeformis (*sinensis*)	Chinese P.	24	,, ,, ,,	W	China
thunbergii	Jap. Black P.	24	,, ,, ,,	W	Japan
virginiana	Scrub P.	24	,, ,, ,,	W	N. Americ
albicaulis	Whitebark P.	—		W	W.N. Ame
aristata	Hickory P.	—		W	N. Americ
cembra	Swiss Stone P.	—		HNW	Eur., N. A
cembroides (*edulis*)	Mex. Stone P.	—		NW	S.W. U.S.A
clausa	Sand P.	—			N. Americ
contorta	Shore P.	—		NW	W.N. Ame
coulteri		—		NW	Calif.
densiflora	Jap. Red P.	—		H	Japan
gerardiana	Nepal Nut P.	—		HW	Himalayas
glabra	Cedar P.	—		W	N. Americ
lambertiana	Sugar P.	—		SuW	W.N. Ame
wallichiana (*excelsa*)	Blue P.	—		SuW	Himalayas
pinea	Ital. Stone P.	—		W	Medit.
pumila	Dwarf Stone P.	—		H	N. Asia
sabiniana	Digger P.	—		NW	Calif.
taeda	Loblolly P.	—		W	N. Americ
torreyana	Torrey P.	—		NW	S. Calif.

PICEA $x=12$					
abies	Norway Spruce	24	Sax & Sax 1933	ReW	Europe
as *excelsa*		24	Miyaki 1903	W	„
glauca (*canadensis*)	White S.	24	Sax & Sax 1933	W	N. America
mariana (*nigra*)	Black S.	24	„ „ „	W	„
pungens		24	„ „ „	W	W:N. Amer.
sitchensis	Sitka S.	24	Thomas unp.	W	W:N. Amer.
PSEUDOTSUGA $x=13$					
taxifolia	Douglas Fir	26	Sax & Sax 1933	W	W:N. Amer.
macrocarpa	Bigcone Spruce	—		H	S. Calif.

5. CUPRESSACEAE

CHAMAECYPARIS $x=11$					
lawsoniana	L. Cedar	22	Sax & Sax 1933	HW	W:N. Amer.
obtusa	Hinoki C.	—		H	Japan
JUNIPERUS $x=11$					
communis	Juniper	22	Sax & Sax 1933	BHSp	N. Temp., Arct.
as *sibirica*		22	Maude 1940		
rigida	Needle J.	22	Sax & Sax 1933	H	Japan
virginiana	Red Cedar	22	„ „ „	HORe	N. America
chinensis	Chinese J.	44	„ „ „	H	China
horizontalis	Creeping J.	—		H	N. America
occidentalis	Calif. J.	—		F	W:N. Amer.
pachyphloea	Alligator J.	—		F	Mexico
sabina	Savin	—		HMO	Eur.; W. As.
THUJA $x=11$					
occidentalis	Arbor-Vitae White Cedar	22	Sax & Sax 1933	BH	N. Am., Sib.
orientalis	Chinese A.-V.	22	„ „ „	H	N. & W. China
plicata (*gigantea*)	West. Red C.	22	„ „ „	StW	W:N. Amer.
standishii	Japanese A.-V.	22	„ „ „	HW	Japan
CUPRESSUS					
sempervirens		—		H	S. Eur., S.W. Asia

6. EPHEDRACEAE

EPHEDRA $x=7$					
americana		14	Florin 1932	—	S. America
as *andina*		14	Resende 1937	—	
campylopoda (*fragilis*)		14	Geitler 1929a	—	Med., Arab.
equisetina	Mongolian E.	14	Florin 1932	M	Sib., China
foliata (?)		14	Mehra 1934	—	Ar., Persia
major		14	Geitler 1929a	—	Medit.
as *nebrodensis*		14	Florin 1932	—	Med., N. As.

EPHEDRA (*cont.*)					
altissima		28	Resende 1937	—	N. Africa
[illegible]ya	Sea Grape	28	Florin 1932	FM	Eur., N. As.
gerardiana		28	Mehra 1934		
sinica	Ma-huang	28	Resende 1937	M	China

7. GNETACEAE

GNETUM *x*=?				
gnemon	24	Coulter 1908	N	Malaya
africanum	*c.* 24	Pearson 1912	—	Trop. Afr.
scandens	—		T	Ind., Mal.

8. WELWITSCHIACEAE

WELWITSCHIA *x*=7				
bainesii (mirabilis)	42	Florin 1932	—	Tr.S.W.Afr.
	42, 84	Fernandes 1936		

0811

II DICOTYLEDONS

ACC No.......... ......

1. MAGNOLIACEAE

MICHELIA *x*=7					
compressa		28	Sugiura 1931	HP	Japan
champaca	Champak	—		HMPW	India, Mal.
fuscata	Banana Shrub	—		H	China
LIRIODENDRON *x*=19					
tulipifera	Tulip Tree	38	Whitaker 1933c	BHSp	E:N. Amer.
chinensis		—		HW	China
MAGNOLIA *x*=19					
fraseri		38	Whitaker 1933c	H	N. America
praecocissima		38	Yasui 1937	H	*cult*
tripetala	Umbrella T.	38	Whitaker 1933c	HW	N. America
virginiana	Am. Sweet Bay	38	,, ,,	H	,,
acuminata	Cucumber T.	76	,, ,,	HW	,,
liliflora	Lily Magnolia	76	,, ,,	HP	Java, China
soulangeana		76	,, ,,	HP	*cult*
obovata (*purpurascens*)		95	Yasui 1937	HP	Japan
grandiflora	Bull Bay	*c.* 114	Morinaga & al 1929	HPSp	E:N. Amer.
denudata	Yulan	114	Yasui 1937	HPSp	China

2. WINTERACEAE

ILLICIUM *x*=7					
anisatum (*religiosum*)	Chinese A.	28	Morinaga & al 1929	HOSp	E. Asia
floridanum	Florida A.	28	Whitaker 1933c	HSp	N. America
verum	Star Anise	—		M	China
DRIMYS *x*=19					
winteri	Winter's Bark	*c.* 76	Whitaker 1933c	M	S. America
axillaris		—		Sp	N. Zealand
aromatica	Pepper T.	—		Sp	Australia

3. SCHISANDRACEAE

SCHISANDRA *x*=7					
sphenanthera		28	Whitaker 1933c	H	C.&W.China
KADSURA *x*=7					
japonica		28	Whitaker 1933c	H	Japan, Korea

6. TROCHODENDRACEAE

EUPTELEA *x*=7					
polyandra		14	Sugiura 1936b	H	Japan
TROCHODENDRON *x*=19					
aralioides		38	Whitaker 1933c	H	Japan, Korea

7. CERCIDIPHYLLACEAE

CERCIDIPHYLLUM $x=19$					
japonicum		38	Whitaker 1933c	W	Japan
TETRACENTRON $x=19$					
sinense		38	Whitaker 1933c	—	China

8. ANNONACEAE

ANNONA $x=7$					
cherimolia	Cherimoyer	14	Kumar & R. 1941, E.K.J.	F	Trop. Amer.
muricata	Sour-sop	14	„ „	F	„ „
reticulata	Custard Apple	14	E.K.J.	F	„ „
squamosa	Sweet-sop	14	Kumar & R. 1941	FM	„ „
glabra (*palustris*)	Alligator Pear	28	E.K.J.	Fs	„ „
diversifolia	Ilama	—		F	„ „
punctata	Pinaon	—		F	Guiana
senegalensis		—		F	Trop. Africa
atemoya (*cherimolia* × *squamosa*)		—		F	*cult*
ASIMINA $x=9$					
triloba	Papaw	18 18	Locke 1936, Bowden 1940a	F	SE.: U.S.A.
ARTABOTRYS $x=9$					
odoratissimus	Climbing Y.-Y.	18	E.K.J.	HPM	Trop. Asia
velutinus		—		F	Gold Coast
CANANGIUM					
odoratum	Ylang Ylang	—		HP	E. Trop. Asia
DUGUETIA					
longifolia		—		F	W.I.—Peru
MONODORA					
myristica	Jamaica Nutmeg	—		Sp	Trop. Africa
OXANDRA					
lanceolata	Lancewood	—		W	W. Indies
POLYALTHIA					
longifolia	Asoth	—		ShW	India
XYLOPIA					
aethiopica	Eth. Pepper	—		Sp	Trop. Africa

11. LAURACEAE

LAURUS $x=7$					
nobilis	Sweet Bay	42	Bambacioni 1936	HSp	Medit.
CINNAMOMUM $x=12$					
camphora	Camphor Tree	24	Sugiura 1936b	MW	Jap., Form., China

CINNAMOMUM (*cont.*)					
japonicum (*pedunculatum*)	Khoga T.	24	Sugiura 1936b	O	Japan
linearifolium	Chinese C.	24	E.K.J.	MSp	China
loureiri	Tonkin C.	24	Sugiura 1936b	MSp	Jap. Form.
obtusifolium	Tej C.	24	E.K.J.	MSp	Him. Bur.
sieboldii (*burmanni*)		24	Täckholm & Söderberg 1917	MSp	Java, Sum.
zeylanicum	Cinnamon	24	E.K.J.	MSpW	S. Ind., Cey., Mal.
cassia	Cassia	—		MSp	S. China
tamala	Cassia Bark T.	—		MSp	India
LINDERA (BENZOIN) $x=12$					
glauca		24	Sugiura 1936b	MPSp	E. Asia
benzoin (*aestivale*)	Spice Bush	24	Jensen 1941	HMP	N. America
triloba		—		O	E. Asia
PERSEA $x=12$					
americana	Avocado Pear	24	Bowden 1940b, E.K.J.	FO	E.N. Am., W. Ind.
pubescens (*carolinensis*)		24	Bowden 1940b	F	N. America
drymifolia	Mexican A.	—		F	Mexico
nanmu	Nan-Mu Wood	—		W	China
SASSAFRAS $x=12$					
albidum (*officinale*)		48	Bowden 1940b	MSp	N. America
ANIBA					
panurensis		—		P	Brazil
CRYPTOCARYA					
moschata	Brazil Nutmeg	—		Sp	Brazil
DICYPELLIUM					
caryophyllatum		—		Sp	Trop. Amer.

14. MYRISTICACEAE

MYRISTICA					
castaneifolia	Kaudamu	—		Sp	Fiji
laurifolia				Sp	Ceylon
fragrans	Nutmeg	—		MSp	E. Ind., Cey.
malabarica	Malabar N.	—		OSp	India
PYCNANTHUS					
kombo	Wild Nutmeg	—		OSp	W. Trop. Af.

15. RANUNCULACEAE

PAEONIA $x=5$					
albiflora		10	Langlet 1927a	HMR	Siberia
anomala		10	,, ,,	H	C. Asia
beresowskyi		10	Dark 1936	H	—

PAEONIA (*cont.*)					
broteri		10	Stebbins 1938	H	Portugal
brownii		10	,, ,,	H	California
californica		10	,, ,,	H	W:N. Amer.
cambessedesii		10	Dark 1936	—	Balearics
clusii		10	Barber 1941a	—	Crete
delavayi		10	Dark 1936	—	China
daurica		10	Barber 1941a	H	Crimea
emodi		10	Dark 1936	HM	Himalayas
japonica		10	Barber 1941a	—	Japan
lactiflora		10	,, ,,	—	N.E. Asia
lutea		10	Stern 1944	H	W. China
mlokosewitchii		10	Barber 1941a	—	Caucasus
montana (*suffruticosa*)		10	Gregory 1941	—	China
moutan	Tree Paeony	10	,, ,,	H	China
potanini		10	Stern 1944	—	W. China
rhodia		10	,, ,,	—	Rhodes
smouthii		10	Dark 1936	H	*cult*
tenuifolia		10	,, ,,	H	Trans.-Cauc.
trollioides		10	,, ,,	—	—
veitchii		10	Gregory 1941	—	China
officinalis		10, 20	,, ,,	HM	
peregrina		10, 20	Dark 1936	H —	Balkans, Asia Min.
mascula (*corallina*)		10, 20	Barber 1941a	M	S. Europe
obovata		10, 20	Sinoto 1938	H	E. Asia
bakeri (*arietina*)		20	Langlet 1928	H	S. Europe
coriacea		20	,, 1927a	—	S. Sp., Mor.
decora		20	,, ,,	H	S. Europe
humilis		20	Barber 1941a	H	S. Europe
mollis		20	Stern & B. unp.	H	Siberia
russii		20	Barber 1941a	—	W. Med. Is.
tenuifolia hybrida		20	Dark 1936	H	*cult*
tomentosa		20	Stebbins 1938	—	Caucasus
wittmanniana		20	Langlet 1927a	H	Caucasus
NIGELLA $x=6, 7$					
arvensis	Wild Fennel	12	Gregory 1941	SpM	Europe, S.W. Asia
as *aristata*		12	,, ,,		
damascena	Turkish Fennel Love-in-a-mist	12	Langlet 1927a	HSpM	Medit.
garidella		12	Gregory 1941	—	Europe
as *nigellastrum*		12	,, ,,		
hispanica		12	,, ,,	H	Spain, N. Afr.
orientalis		12	,, ,,	H	Asia Min.
sativa	Black Cumin	12	,, ,,	HSpM	Medit.
viridis		12	,, ,,	—	
diversifolia		14	Langlet 1927a	M	Turkestan

THALICTRUM $x=7$

alpinum		14	Gregory 1941	H —	N. Temp. Arct.
aquilegiifolium		14, 28	,, ,,	H	Europe
foetidum		14	Langlet 1927a	—	Eur., Him.
foliosum		14	,, ,,	—	Himalayas
montanum		14	Kuhn 1928a	—	Europe
petaloideum		14	,, ,,	—	N. Asia
przewalski		14, 70	Gregory 1941	—	China
yesoënse		14	M & S. 1935	—	Japan
bulgaricum		28	Kuhn 1928a	—	Bulgaria
corynellum		28	,, ,,	—	N. Amer.
dipterocarpum		28	,, ,,	H	W. China
elatum (*minus*)		28	,, ,,	—	C. Europe
fendleri		28	Langlet 1927a	—	W:N. Amer.
flavum	Meadow Rue	28, 84	Gregory 1941	— —	Eur., N. Asia
galioides		28	Kuhn 1928a	—	—
glaucum		28	Gregory 1941	H	S. Europe
lucidum (*angustifolium*)		28	,, ,,	—	Europe
majus		28	,, ,,	—	Europe
mediterraneum (*angustifolium*)		28	Langlet 1927a	—	,,
rufinerve (*flavum*)		28	Kuhn 1928a	—	,,
rugosum		28	,, ,,	—	—
tuberosum		28	,, ,,	H	W. Europe
exaltatum (*flavum*)		28, 35	,, ,,	—	
anemonoides		42	,, ,,	H	N. America
banaticum		42	,, ,,	—	—
calabricum		42	,, ,,	—	C. Italy
chelidonii		42	,, ,,	—	Himalayas
confine		42	,, ,,	—	N. America
cornuti (*dasycarpum*)		42	Langlet 1927a	—	N. America
cultratum		42	Kuhn 1928a	—	Himalayas
delavayi		42	Gregory 1941	—	China
dioicum		42	Kuhn 1928a	—	N. America
javanicum		42	,, ,,	—	India, Java
maximum		42	,, ,,	—	—
orientale		42	,, ,,	—	Greece, Asia Minor
pauciflorum		42	Langlet 1927a	—	Himalayas
purpurascens (*dasycarpum*)		28, 42	Gregory 1941	—	U.S.A.
rubellum		42	Langlet 1927a	—	Eur., N. As.
sparsiflorum		42	Kuhn 1928a	—	N. China, W:N. Am.
squarrosum		42	,, ,,	—	Siberia
simplex		56, 70, 112	Gregory 1941	—	Eur., N. As.
minus		42, 48	,, ,,	H	Eur., N. Afr. As.
as *flexuosum*		42	Kuhn 1928a		

THALICTRUM (*cont.*)					
as *rariflorum*		56, 112	Gregory 1941		
as *kemense*		70	Langlet 1927a		
revolutum		*c.* 133	Gregory 1941	—	N. America
polygamum (*corynellum*)		154	,, ,,	—	N. America
AQUILEGIA *x*=7, 8					
akitensis		14	Sakai 1935	—	Japan
alpina	Alpine C.	14	Lewitsky 1931b	HM	Eur., Sib.
baikalensis		14	Gregory 1941	H	*cult*
caerulea		14	,, ,,	H	W:N. Amer.
canadensis		14	,, ,,	H	N. America
chrysantha		14	,, ,,	H	New Mexico
coccinea		14	,, ,,	—	N. America
dichroa		14	,, ,,	—	Europe
einseliana		14	,, ,,	—	,,
flabellata		14	Skalinska 1931	H	Japan
glandulosa		14	Gregory 1941	H	Siberia
haylodgensis		14	Langlet 1927a	H	*cult*
jucunda (*glandulosa*)		14	Gregory 1941	—	—
longissima		14	,, ,,	—	N. America
nigricans (*vulgaris*)		14	,, ,,	H	Eur., Persia
skinneri		14	,, ,,	H	C. America
truncata (*formosa*)		14	Skalinska 1931		Kamchatka
vulgaris	Columbine	14	Gregory 1941	HM	Europe
hirsutissima		28	,, ,,	H	*cult*
olympica		16	S. & S. 1940	—	S.W. Asia
CIMICIFUGA *x*=8					
acerina		16	Sugiura 1937b	—	Japan
americana	American B.	16	Langlet 1932	H	N. America
cordifolia		16	,, ,,	—	N. America
davurica		16	,, ,,	H	C. Asia
foetida	Bugbane	16	Nakajima 1933	I.M.	Eur., Sib.
japonica		16	Langlet 1932	H	Japan
racemosa	Black Snake Root	16	Gregory 1941	M	N. America
ACTAEA *x*=8					
alba	White Baneberry	16	Langlet 1932	—	N. America
rubra	Red Baneberry	16	,, ,,	—	N. Temp.
spicata	Black Baneberry	16	,, 1927a	M	,,
ADONIS *x*=8					
vernalis	False Hellebore	16	Langlet 1927a	M	Europe
dahurica		24	,, ,,	—	N. Asia
autumnalis	Pheasant-eye	32	,, ,,	—	E. Europe
v. *amurensis*		40	Sugiura 1931	M	Manchuria
ACONITUM *x*=8					
chasmanthum		16	Schafer unp.	M	—
luridum		16	Afifi 1933	M	Medit.

ACONITUM (*cont.*)					
orientale	Caucasian M.	16	Schafer & L. C. 1934	M	Caucas.
uncinatum	Climbing M.	16	Longacre 1942	H	N. Am., Jap.
barbatum, etc.	Wolfsbane	16	S. & S. 1938	—	Eur., Sib.
stoerkianum		24	Schafer & L. C. 1934	M	Europe
anglicum		32	,, ,,	M	Britain
altaicum, etc.		32	S. & S. 1938	—	Altai
napellus	Monkshood	32	Langlet 1932	HM	N. Temp.
palmatum	Bikhma	48	Schafer & L. C. 1934	M	Himalayas
wilsoni	Azure M.	64	,, ,,	M	N. Asia & Am.
other species		—	Gregory 1941		
ISOPYRUM $x=7$					
fumarioides etc.		14	Gregory 1941	—	Eur., Asia Minor
ANEMONELLA $x=7$					
thalictroides	Rue Anemone	14	Gregory 1941	H	N. America
ANEMONOPSIS $x=8$					
macrophylla		16	Langlet 1932	H	Japan
ANEMONE (PULSATILLA)		$x=7, 8$			
$x=7$					
acutiloba		14	Langlet 1932	—	N. America
debilis		14	Sakai 1935	—	Siberia
demissa	Drooping A.	14	Langlet 1936	H	Himalayas
flaccida		14	M. & S. 1935	—	Jap., China
narcissiflora		14	Gregory 1941	H	N. Tem.
angulosa		28	,, ,,	—	E. Europe
hepatica		14, 28	,, ,,	HM	Eur. E:N. Amer.
$x=8$					
albana		16	Langlet 1932	—	N. & S.W. Asia
alpina		16	Gregory 1941	H	Eur., N. & S.W. Asia
altaica		16	,, ,,	—	Siberia
apennina		16	Böcher 1932	H	Europe
baicalensis		16	Langlet 1927a	—	Temp. Asia
borealis (*parviflora*)		16	Moffett 1932b	—	North Reg.
bulgarica		16	Rosenthal 1936	—	—
caroliniana		16	Moffett 1932b	H	N. America
chrysantha		16	S. & S. 1940	—	Caucasus
cernua		16	Gregory 1941	H	Japan
coronaria	Poppy A.	16	,, ,,	H	Medit.
cylindrica		16	,, ,,	—	N. America
dichotoma		16	Guinochet 1935	—	N. Asia, N. America

ANEMONE (*cont.*)

georgica		16	Langlet 1932	—	—
hortensis	Garden A.	16	Guinochet 1935	H	S. Europe
hupehensis		16	Langlet 1927a	—	China
japonica	Japanese A.	16	Gregory 1941	H	Jap., China
leveillei		16	,, ,,	—	China
mexicana		16	Moffett 1932b	—	Mexico
montana		16	Gregory 1941	—	Eur., Cauc.
parviflora		16	,, ,,	—	N. America
patens		16	Rosenthal 1936	—	Eur., N. Am.
pavoniana		16	Langlet 1932	—	Sp., Port.
pratensis		16	Gregory 1941	—	Europe
reflexa		16	Rosenthal 1936	—	Siberia
riparia		16	Dahl 1937	—	N. America
rivularis (*elongata*)		16	Gregory 1941	H	Himalayas
sibirica		16	,, ,,	H	Siberia
transsylvanica		16	,, ,,	—	Europe
vernalis		16	,, ,,	H	,,
virginiana		16	,, ,,	—	N. America
vitifolia		16	,, ,,	H	Himalayas
baldensis		24	,, ,,	H	Europe
decapetala		24	Moffett 1932b	H	N. & S. Am.
nemorosa	Wood A.	24, 32	Gregory 1941	H	N. Temp.
fulgens	Scarlet A.	16, 32	,, ,,	H	Medit.
blanda		16, 32	,, ,,	—	S.W. Asia
sylvestris	Snowdrop A.	16, 32	,, ,,	H	Eur., Cauc.
armena		32	Langlet 1932	—	Asia Minor
bogenhardiana		32	Zimmerman 1932	—	Europe
halleri		32	Rosenthal 1936	H	,,
magellanica		32	Moffett 1932b	—	Chile
multifida		32	Gregory 1941	—	N. & S. Am.
palmata		32	Langlet 1932	—	Medit.
pulsatilla	Pasque Flower	32	Gregory 1941	H	Eur., Sib.
ranunculoides		32	,, ,,	H	Europe
rubra (*pulsatilla*)		32	Rosenthal 1936	H	Eur., Sib.
rupicola		32	Gregory 1941	—	Himalayas
trifolia		30, 32	,, ,,	H	Europe
vulgaris		32	Böcher 1932	—	—
montana		48	Moffett 1932b		Eur., Cauc.

RANUNCULUS $x=7, 8$

acer (*acris*)	Tall Buttercup	14, 16, 18, 28	Gregory 1941	H	Europe
		14+2-10f	Langlet 1927a		
aduncus (*villarsii*)		14	,, ,,	—	S. Eur.
carpaticus		14	,, ,,	—	Spain
cassius		14	Gregory 1941	—	A. M., Syria
garganicus (*millifolius*)		14	Langlet 1936	—	Medit.
lacerus		14	,, ,,	—	France
lanuginosus		14, 28	Gregory 1941	—	Eur., Cauc.

RANUNCULUS (*cont.*)					
constantinopolitanus		14, 42	Gregory 1941	—	A. Minor
tuberosus (acris)		28	Langlet 1936	—	
aconitifolius		14, 16	Gregory 1941	H	Europe
bulbosus		14, 16	„ „	H	Eur., Persia
chius		14, 16	„ „	—	Greece, A. M.
nelsoni		14, 16	„ „	—	W:N. Amer.
asiaticus	Turban B.	16, 32	„ „	H	S.W. Asia
abchasicus, etc.		16	S. & S. 1940, 1941	—	Caucasus
ficaria	Lesser Celandine	16,	M. 1939	HM	Eur., Cauc.
		16+2f, 24, 32, 40 48	Rutland 1941		
aquatilis	Water Crowfoot	32	Böcher 1932	H	Temp.
auricomus		16, 32, 48	Gregory 1941	—	N. Temp.
repens	Creeping B.	32	„ „	H	„
sceleratus	Blister B.	32	„ „	M	„
monophyllus		32	S. & S. 1938	—	Altai
pulchellus		40	„ „	—	Him.—Sib.
falcatus		40	Langlet 1932	—	Eur., Him.
trilobus		42, 48	Gregory 1941	—	Medit.
apiifolius		48	Langlet 1932	—	Argentine
muricatus		48	Gregory 1941	—	„
nivalis		48, 56	„ „	HM	Arctic
septentrionalis	Swamp B.	32, 64	„ „	—	„
sulphureus		*c.* 80, 96	„ „	M	„
lingua	Gr. Spearwort	128	Langlet 1932	H	Eur., Sib.
other species		—	Gregory 1941		
CALTHA $x=8$					
palustris	Marsh Marigold	32, 48, 56	S. & S. 1938, 1941	HM	North Reg.
leptocephala		48	Langlet 1932	HM	W:N. Am.
radicans		48	Gregory 1941	H	Scotland
polypetala		64	Langlet 1932	M	A. M., Pers.
TROLLIUS $x=8$					
acaulis		16	Langlet 1932	H	Himalayas
albiflorus		16	„ „	—	N. America
asiaticus (chinensis)		16	„ „	H	N. & E. Asia
as *giganteus*		16	„ „		*cult*
as *japonicus*		16	Lewitsky 1931b		
caucasicus		16	Langlet 1932	H	Caucasus
europaeus	Globe Flower	16	„ „	H	Eur., Cauc.
hybridus		16	„ „	—	*cult*
purpuratus		16	M. & S. 1935	—	—
yunnanensis		16	Gregory 1941	—	China
americanus		32	Langlet 1932	H	N. America
HELLEBORUS $x=8$					
abschasicus		32	Gregory 1941	H	Caucasus
antiquorum		32	Langlet 1932	—	„
corsicus		32	„ „	—	Corsica

HELLEBORUS (*cont.*)					
dumetorum		32	Langlet 1932	—	Europe
foetidus	Stinking Hellebore	32	,, 1927a	IM	,,
hybridus		32	,, ,,	H	*cult*
niger	Christmas Rose	32	,, ,,	HM	Europe
odorus		32	,, 1932	H	Hungary
orientalis		32	,, ,,	H	Greece, A. Min.
viridis	Green H.	32	,, ,,	H	Europe
CALLIANTHEMUM $x=8$					
rutaefolium					
as *coriandraefolium*		16	Langlet 1932	—	Siberia
as *anemonoides*		32	,, ,,	—	,,
miyabeanum		32	Sakai 1935	—	Japan
ERANTHIS $x=8$					
cilicica		16	Langlet 1932	—	Cilicia
hyemalis	Winter Aconite	16	Gregory 1941	H	Europe
MYOSURUS $x=8$					
minimus	Mousetail	16	Gregory 1941	H	Eur., N. Am.
TRAUTVETTERIA $x=8$					
carolinensis		16	Gregory 1941	H	N. America
japonica		16	,, ,,		Japan
palmata		16	,, ,,	H	W.N. Am., Japan
KNOWLTONIA $x=8$					
vesicatoria		48	Langlet 1932	H	S. Africa
DELPHINIUM $x=8$					
ajacis	Rocket Larkspur	16	Gregory 1941	HM	S. Europe
brachycentrum		16	Langlet 1932	H	Kamchatka
brunonianum		16	Lewitsky 1931b	H	Himalayas
cardinale		16 (32)	Mehlquist et al 1943	H	S. & Lr. Cal
cardiopetalum		16	Gregory 1941	H	Medit.
consolida	Forking L.	16	Lewitsky 1931b	H	Europe
delavayi		16	,, ,,	—	N. As., W. China
gayanum		16	Gregory 1941	—	Europe
grandiflorum (*chinense*)		16	,, ,,	HM	Siberia
nudicaule	Orange L.	16	,, ,,	HM	N.W. Amer
orientale		16	,, ,,	M	E. Europe, S.W. Asia
penardi		16	,, ,,	—	N. America
peregrinum		16	,, ,,	—	S. Eur., S.W. Asia
pictum (*requienii*)		16	,, ,,	H	Medit.
scopulorum		16	,, ,,	—	N. Mexico

ELPHINIUM (*cont.*)					
speciosum		16	Langlet 1927a	—	Cauc., Persia
atsiense		16	Lewitsky 1931b	—	China
tricorne		16	Gregory 1941	—	N. America
tyunnanense		16	,, ,,	—	W. China
moerheimii		24	Lawrence 1936	H	*cult*
azureum (*carolinianum*)		32	Lewitsky 1931b	H	N. America
bulleyanum		32	Gregory 1941	—	China
carolinianum		32	,, ,,	—	N. America
caucasicum		32	,, ,,	—	Caucasus
duhmbergii		32	,, ,,	—	S. Russia
elatum (*exaltatum*)		32	,, ,,	H	Eur., Him.
fissum (*hybridum*)		32	,, ,,	—	Eur., S.W. Asia
flexuosum		32	,, ,,	—	N. America
formosum		32	,, ,,	H	Armenia
ruysii		32	Lawrence 1936	H	*cult*
staphisagria	Stavesacre Seed	16, 32	Gregory 1941	HMI	Medit.
truncatum		32	Langlet 1927a	—	—
belladonna		48	,, ,,	H	*cult*
lamartini		48	Lawrence 1936	—	,,
zalil		—		DM	W. Asia
LEMATIS $x=8$					
addisonii		16	Gregory 1941	H	Virginia
alpina		16	,, ,,	H	Eur., Asia
brevicaudata		16	,, ,,	H	Manch., W. China
campaniflora		16	Meurman & Th. 1939	H	Portugal
crispa		16	Gregory 1941	H	N. America
dioica		16	,, ,,		Jamaica
douglasii		16	,, ,,	H	Rocky Mts.
eriostemon		16	Meurman & Th. 1939	H	*cult*
flammula		16	,, ,,	H	Medit.
fremontii		16	Gregory 1941	H	W:N. Amer.
fusca		16	Meurman & Th. 1939	H	China, Jap.
globosa		16	Gregory 1941	H	*cult*
heracleaefolia		16	,, ,,	H	China
hybrida		16	Meurman & Th. 1939	H	*cult*
indivisa		16	Hair 1942	H	N. Zealand
integrifolia		16	Meurman & Th. 1939	H	S. Eur., E. Asia
jackmannii		16	,, ,,	H	*cult*
koreana		16	,, ,,	H	Korea
lasiantha	Pipestem C.	16	,, ,,	H	W:N. Amer.

CLEMATIS (*cont.*)					
ligusticifolia		16	Meurman & Th. 1939	H	N. America
montana		16	,, ,,	H	Himalayas
ochotensis		16	Langlet 1927a		E. Siberia
ochroleuca		16	Gregory 1941	H	N. America
recta		16	Langlet 1927a	H	S. Europe
scottii		16	Gregory 1941	H	W:N. Ame
serratifolia		16	Meurman & Th. 1939	H	Korea
stans		16	Langlet 1927a	H	Japan
tangutica	Golden C.	16	Meurman & Th. 1939	H	C. Asia
texensis	Scarlet C.	16	,, ,,	H	N. Americ
virginiana		16	Gregory 1941	H	,,
vitalba	Traveller's Joy	16	Meurman & Th. 1939	H	Eur., N. Afr., S.W Asia
viticella		16	,, ,,	H	E. Eur., S.W. As.
mandschurica		32	,, ,,	H	Japan
paniculata		16, 48, 64	Gregory 1941	H	,,
COPTIS $x=9$					
japonica etc.		18	Gregory 1941	—	Japan
ZANTHORRHIZA $x=9$					
apiifolia	Shrub Yellow-root	36	Langlet 1932	H	N. Americ
GLAUCIDIUM $x=10$					
palmatum		20	M. & S. 1935	—	Japan
HYDRASTIS $x=13$					
canadensis	Golden Seal	26	Langlet 1928	M	N. Americ

18. NYMPHAEACEAE

NYMPHAEA $x=7$ or 14					
capensis	Cape Waterlily	28	Langlet & S. 1927	HR	S. Africa
stellata	Macongee Congee	28	,, ,,	HVR	Tr. As., A
lotus	Egyptian W.	56	,, ,,	HVR	,, ,,
mexicana	Mexican W.	56	,, ,,	HR	Mexico
rubra	Red Waterlily	56	,, ,,	HR	Tr. As., A
odorata	American W.	84	,, ,,	HRM	N. Temp
tuberosa	Magnolia W.	84	,, ,,	HR	N. Amer.
alba	Flatterdock	84, 112?	,, ,,	HBD	N. Temp
		112	Langlet 1936		
as *candida*		*c.* 160	Lohammar, L. & L. 1942		
gigantea	Austr. W.	224	Langlet 1936	HRV	Australia

NELUMBIUM (NELUMBO) $x=8$					
luteum	Amer. Lotus	16	Langlet & S. 1927	HR	N. Am. W. I.
speciosum (*nuciferum*)	Lotus	16	„ „	HVM	N. Afr., Tr. As.
VICTORIA $x=10$					
regia	Giant W.	20	Langlet & S. 1927	HN	Amazon
v. *cruciana*		24	Heitz 1932		*cult*
CABOMBA $x=12$					
caroliniana	Fish Grass	24	Nitzschke 1914	H	N. America
NUPHAR $x=17$					
advenum	Spatterdock	34	Langlet & S. 1927	H	N. America
japonicum		34	„ „	H	Japan
luteum	Yellow W.	34	„ „	HR(B)	N. Temp.
microphyllum		34	„ „	H	Eur., N. Am.
pumilum (*minimum*)		34	„ „	H	„ „
EURYALE $x=29$ (12+17?)					
ferox	Gorgon W.	58	Langlet & S. 1927	HMNV	Ind., China

19. BERBERIDACEAE

NANDINA $x=5$					
domestica		20	Sugiura 1936b	H	China, Jap.
ACHLYS $x=6$					
japonica		12	M. & S. 1935	H	Japan
triphylla	Deer foot	—		H	N. America
DIPHYLLEA $x=6$					
grayi	Umbrella Leaf	12	M. & S. 1935	H	Japan
cymosa		12	Langlet 1928	H	N. America
EPIMEDIUM $x=6$					
hexandrum		12	Langlet 1928		W:N. Amer.
macranthum (*grandiflorum*)		12	„ „	H	Japan
musschianum		12	„ „	H	„
pinnatum		12	„ „		Persia
rubrum (*alpinum*)		12	„ „	H	Europe
JEFFERSONIA $x=6$					
diphylla (*binata*)		12	Langlet 1928	H	N. America
dubia		12	„ „	H	Manchuria
PODOPHYLLUM $x=6$					
emodi	Indian P.	12	Langlet 1928	HM	Himalayas
leichtlinii?		12	„ „		—
peltatum	May Apple	12	„ „	HM	N. America
versipelle		12	Darlington 1936a	M	China
MAHONIA (BERBERIS) $x=7$ or 14					
aquifolium	Mahonia	28	Dermen 1931b	BFH	W:N. Am.
repens		28	„ „	FH	„

BERBERIS $x=7$ or 14					
aggregata		28	Dermen 1931b	H	China
amurensis	Amur Barberry	28	,, ,,	H	Manchuria
angulosa	Himalayan B.	28	Giffin 1936	FH	Him., Ind.
aristata	Nepal B.	28	,, ,,	DFH	Himalayas
atrocarpa		28	,, ,,	H	China
beaniana		28	,, ,,	H	W. China
brachypoda		28	,, ,,	H	China
canadensis	American B.	28	Dermen 1931b	F	N. America
circumserrata (*diaphana*)		28	,, ,,	H	China
cretica	Parveritshia	28	Giffin 1936	D	Medit.
darwinii		28	,, ,,	FH	Chile, Pat.
dictyophylla	Chalkleaf B.	28	,, ,,	H	China
empetrifolia	Fuegian B.	28	,, ,,	F	Magellan
heterophylla		28	,, ,,	H	Chile
ilicifolia	Holly B.	28	,, ,,	—	S. Chile
lycium	Indian B.	28	,, ,,	BFV	Himalayas
polyantha		28	,, ,,	H	W. China
pruinosa		28	,, ,,	H	Yunnan
sinensis (*chinensis*)		28	,, ,,	FH	China
soulieana		28	,, ,,	H	China
tibetica		28	Dermen 1931b	H	Tibet
vernae		28	,, ,,	H	China
vulgaris	Common B.	28	Langlet 1928	MDFH	Eur., Temp. Asia
yunnanensis	Yunnan B.	28	Dermen 1931b	H	China
buxifolia (*dulcis*)	Magellan B.	28	Giffin 1936	FH	Patagonia
turcomanica		56	Tischler 1928		
v. *integerrima*		56	Dermen 1931b	H	Temp. Asia
fortunei		—		D	China
other species		—	Giffin 1936		
CAULOPHYLLUM $x=8$					
robustum		16	M. & S. 1935	H	Manchuria
thalictroides	Blue Cohosh	16	Langlet 1928	H	N. America

21. LARDIZABALACEAE

LARDIZABALA $x=7$					
biternata		28	Langlet 1928	H	Chile
AKEBIA $x=8$					
quinata	Fiveleaf A.	32	Velser 1913	H	China
lobata (*trifoliata*)		32	Kuwada, T. 1927	H	Japan
DECAISNEA $x=15$					
fargesi		30	Simonet & M. 1932	H	China

23. MENISPERMACEAE

TINOSPORA $x=12, 13?$					
cordifolia		24	Joshi 1934	M	India
		26	Abraham 1942		
COCCULUS $x=13, 19$					
leaeba		26	Hagerup 1932	—	E. Trop. As., Trop. Afr.
villosus		38	Joshi 1934	M	Ind., Trop. Afr.
trilobus		50	Nakajima 1937	—	Japan
pendulus		—		M	Trop. Africa
MENISPERMUM $x=13$					
canadense		52	Lindsay 1930	H	N. America
dauricum		52-54	Langlet 1928	H	N. China
ANAMIRTA					
cocculus		—		M	India
JATRORRHIZA					
palmata	Calumba	—		M	Trop. Afr.

24. ARISTOLOCHIACEAE

ARISTOLOCHIA $x=7$					
fimbriata		14	Täckholm & S. 1918	HM	Brazil
clematitis	Birthwort	28	Samuelsson 1914	HM	Eur., Cauc., A. Min.
sipho (*durior*)	Dutchman's Pipe	28	Täckholm & S. 1918	H	N. America
elegans	Calico Flower	—		H	Brazil
indica		—		M	India
serpentaria	Virg. Snakeroot	—		HM	N. America
tagala		—		M	India
ASARUM $x=12$					
dilatatum as *dimidiatum*	Snakeroot	24	Tanaka 1935	Sp.	Japan
europaeum	Asarabacca	*c.* 24	Täckholm & S. 1918	M	A. Min., Sib.
canadense	Canadian S.	—		HSp.	N. America
HETEROTROPA (ASARUM) $x=12$					
costata		24	Tanaka 1935	H	Japan
nipponica		24	,, ,,	H	Japan
serpens		36	,, ,,	H	*cult*
megacalyx		48	,, ,,	H	Japan
20 other species		24	,, ,,		

25. CYTINACEAE (RAFFLESIACEAE)

MITRASTEMON $x = 20$					
kawa-sasakü		40	Watanabe 1935	Par	Japan
yamamotoi		40	„ 1934	Par	„
RAFFLESIA					
arnoldi		—		Par	Malaya

27. NEPENTHACEAE

NEPENTHES					
distillatoria	Pitcher Plant	—		CH	Ceylon
rafflesiana	„	—		CH	E. Indies

28. PIPERACEAE

PEPEROMIA $x=8, 12$					
sintenisii		16	Brown 1908	—	W. Indies
sandersii (*arifolia*)		24	Sugiura 1936a	H	Brazil
metallica		24	Abele 1923	—	Peru
pellucida		*c.* 24	Johnson 1914	HM	E. Indies
resediflora		24	Häuser 1916	—	Peru
verschaffeltii		24	Abele 1923	—	Brazil
PIPER $x=8, 12$					
chaba		24	E.K.J.	DM	Ind., Mal.
subpeltatum (*umbellatum*)		24	Johansen 1931b	Sp	S.E. Asia
betle	Betel	32	Johnson 1910 E.K.J.	Sp	India
nigrum	Pepper	*c.* 128	E.K.J.	Sp	India
cubeba	Cubeb	—		SpM	Malaya
guineense	Masoro	—		SpM	Trop. Afr.
longum	Long Pepper	—		SpM	Ind., Mal.
methysticum	Kava	—		SpB	Pacific Is.
ornatum		—		H	Celebes

29. SAURURACEAE

HOUTTUYNIA $x=?$					
cordata		*c.* 96	Okabe 1934	H	Him.—Jap.

30. CHLORANTHACEAE

CHLORANTHUS $x=7, 15$					
glaber	Chloranth	28	Sugiura 1931	BHM	Ind., Mal., China
		30	M. & S. 1935		
serratus		28	Sugiura 1931	HM	Japan
		30	M. & S. 1935		
japonicus		30	„ „	M	China, Jap.
spicatus		30	Sugiura 1936a	M	Japan
officinalis				BM	E. Asia
ASCARINA					
lucida		—		H	N. Zealand

32. PAPAVERACEAE

CHELIDONIUM $x=6$					
majus	Greater Celandine	12	Bowden 1940a	HM	Eur., A. Min.
		12	E.K.J.		
		12	Sugiura 1940		
		10 ?	Nagao & S. 1939		
v. *laciniatum*		12	Sugiura 1940		
DICRANOSTIGMA (CHELIDONIUM) $x=6, 8$?					
franchetiana		12	Sugiura 1940	M	China
		16	Smith, T. 1936		
GLAUCIUM $x=6$					
corniculatum	Horned P.	12	Sugiura 1936b	H	Eur., Med.
flavum (*seuperi*)		12	„ „	H	„ „
HYLOMECON (STYLOPHORUM) $x=6$					
japonicum		12	Sugiura 1937b	H	Japan
diphyllum	Celandine P.	—		H	N. America
PLATYSTEMON $x=6$					
californicum		12	Sugiura 1937b	H	W:N. Amer.
ESCHSCHOLTZIA $x=6$					
caespitosa		12	T. 1936	H	California
californica	Cal. Poppy	12	Lawrence 1930	H	Cal., Oregon
pulchella		12	Sugiura 1940	H	California
ROEMERIA $x=6, 7, 9, 11$					
violacea		12	Sugiura 1937b	H	Eur., N. Afr.
rhodifolia		14	„ „		Persia
refracta		18	„ „	H	Asia Minor
speciosa		18	„ „	H	„
hybrida		22	„ 1940	H	S. Europe
PAPAVER $x=6, 7, 11$					
$x=6$ (7)					
apulum		12	Sugiura 1936a	H	Italy
caucasicum		12	„ 1937b	H	Caucasus
pavoninum	Peacock P.	12	„ 1936a	H	Afgh., Turkest.
atlanticum (*rupifragum*)		12, 14	„ 1940	H	Sp., Mor.
argemone		12	Beale, M. 1939	H	Eur., N. Afr.
		42	Sugiura 1940		
$x=7$					
alpinum (*burseri*)	Alpine P.	14	Sugiura 1936a	H	Alps, Arctic
armeniacum		14	„ 1940	H	E. Medit.
bracteatum	Gr. Scarlet P.	14	Yasui 1936a	H	Med., Pers.
commutatum		14	Philp 1933b	—	Eur., Med.
desertorum		14	Sugiura 1940	—	Transcauc.
floribundum		14	„ „	H	Caucasus

PAPAVER (*cont.*)					
glaucum		14	Sugiura 1931	H	Syria
heldreichii		14	„ 1940	H	Medit.
hookeri		14	„ 1937b	—	India
hybridum		14	„ 1940	—	Eur., Syr., N. Afr.
lateritium		14	Yasui 1941	H	Armenia
oreophilum		14	Sugiura 1940	—	Caucasus
persicum		14	„ „	—	„
rhoeas	Field Poppy	14	Lawrence 1930	HMSp	Eur., Cauc.
schinzianum		14	Sugiura 1940	H	*cult*
strictum		14	„ „	—	As. Min.
umbrosum		14	„ 1931	HO	Eur., Med.
nudicaule	Arctic P.	14	„ 1940	HMSp	Alps, Arctic
		28	Horn 1938		
radicatum		14	Sugiura 1940	H	Arct., Scand.
		70	Horn 1938		
pinnatifidum		28	Sugiura 1940	H	Italy, Sard.
triniaefolium		28	„ „	H	Asia Minor
dubium		28	Ljungdahl 1922	H	Europe
		42	Sugiura 1940		
orientale	Oriental P.	42	R. Yamazaki 1936	HMOSp	A. Min., Pers.
laestadianum		56	Horn 1938	—	Arct., Scand.
lapponicum		56	„ „	—	„
relictum		70	„ „	—	Alps, Arctic
$x=11$					
somniferum	Opium P.	22 (44)	Furusato 1940	HMO	Balk., Pers.
setigerum		22	Sugiura 1940	HMO	„ „
		44	Kuzmina 1935		
ARGEMONE $x=7$					
barclayana		28	Sugiura 1940	—	Mexico
grandiflora	Prickly Poppy	28, 56	T. 1936, Sugiura 1940	H	S.W. Mexico
mexicana	Mexican P.	28	Sugiura 1936b	MO	Mexico
v. *typica*		56	„ „		
platyceras	Crested P.	—		H	N. & S. Amer.
HUNNEMANNIA $x=7$					
fumariaefolia	Tulip P.	56	Sugiura 1936b	H	Mexico
MECONOPSIS $x=7, 11$					
cambrica	Welsh P.	22	Maude 1940	H	W. Europe
		28 ?	Sugiura 1940		
nepalensis	Satin P.	28	„ „	H	Himalayas
betonicifolia (*baileyi*)		—		H	China
HYPECOUM $x=6, 8?$					
procumbens		12	Smith T. 1936		Med., Arab.
		16	Sugiura 1937b	H	

PTERIDOPHYLLUM $x=9$					
racemosum		18	Sugiura 1936b	H	Japan
BOCCONIA (MACLEAYA) $x=10$					
frutescens		20	Sugiura 1937b	H	Mex., Peru
microcarpa		20	" "	H	China
MACLEAYA $x=10$					
cordata	Plume Poppy	20	Sugiura 1937b	H	China, Jap.
SANGUINARIA					
canadensis	Blood Root	—		M	E. N. Amer.

33. FUMARIACEAE

FUMARIA $x=7, 8?$					
officinalis	Fumitory	14	Sugiura 1937b	HM	Europe
		28	Wulff 1937b		
		32	Vaarama 1943		
micrantha		28	Negodi 1936a	H	France
parviflora		28	" "	H	Temp.
agraria		56	" "	H	Medit.
capreolata		56	" "	H	Europe
DICENTRA $x=8$					
pusilla		16	Sakai 1934	—	Japan
spectabilis		16	Matsuura & S. 1935	H	Japan
formosa		24?	Kellet, T. 1936	H	N.W. Amer.
CORYDALIS $x=8$					
cava		16	Lawrence 1930	—	Europe
solida (*bulbosa*)	Fume Wort	24	Maude 1940	R	"
lutea		56?	Kellet, T. 1936	—	"
ADLUMIA $x=8$					
cirrhosa (*fungosa*)	Allegheny Vine	32	Smith, T. 1936	H	N. America

35. LOASACEAE

LOASA $x=7, 15$					
triphylla		28	Sugiura 1936a	H	Peru
vulcanica		28	" 1937b	H	Ecuador
ferruginea		30	" 1940	—	Peru
hispida (*urens*)		30	" 1936a	—	"
CAIOPHORA (LOASA) $x=8$					
lateritia	Ch. Nettle	16	Sugiura 1940	H	Chile
as *L. aurantiaca*		24?	" 1936a		
BLUMENBACHIA (LOASA) $x=12$					
hieronymi	Sting Lily	24	Sugiura 1936b	H	Argentine
MENTZELIA (BARTONIA) $x=?$					
lindleyi		36	Sugiura 1936a	H	California

36. CAPPARIDACEAE

CADABA $x=9$					
indica		18	Raghavan & V. 1941a	V	India
farinosa		—		V	N.W. Ind., Africa
CAPPARIS $x=9, 10, x_2=19$					
cynophallophora		18	Kuhn 1928b	—	S. America
saligna		30	„ „	—	„
rothii		40	Hagerup 1932	V	Trop. Afr.
sepiaria	Indian Capers	40	Raghavan 1938	V	India
zeylanica		40	Raghavan & V. 1941a	V	„
spinosa	Caper Bush	38	Taylor 1925c	HV	Med.
acutifolia		*c.* 84	Kuhn 1928b	—	China
decidua	Sodad	—		V	Med.
MAERUA $x=10$					
arenaria	Earth-Sugar Plant	20	Raghavan & V. 1941a	MSu	India
POLANISIA (CLEOME) $x=10$					
trachysperma		20	Raghavan 1938	H	N. America
CLEOME $x=10, 11$ etc.					
spinosa	Spider F.	20	Ufer 1937	H	S. America
		24	Sugiura 1936a, b		„
as *gigantea*		20	Lewitsky 1931		„
		70, 140	Ufer 1927		
viscosa		20	Janaki Ammal 1933	M	O.W. Trop.
graveolens		22	Sugiura 1936a, b	—	N. America
monophylla		22	„ „	—	Ind., Trop. Afr.
candelabrum		32	„ „	H	—
paradoxa		32	T. 1922	—	Abyss.
chelidonii		34	Raghavan & V. 1941a	—	Ind., Java
CRATAEVA $x=13$					
adansoni		26	Raghavan & V. 1939a	W	Trop. Afr.
religiosa (*nurvala*)	Sacred Barna	26	„ „	HMSp W	Tropics
GYNANDROPSIS $x=?$					
pentaphylla	Cat's Whiskers	30	Sugiura 1937b	HOV	Trop. Afr., Asia
		32	V. S. Rao 1936b		
		34	Raghavan 1938		
speciosa		—		H	Mex., C. Amer.

DACTYLAENA *x*=16					
micrantha		32	Sugiura 1936a, b	—	Brazil
SOMERIS *x*=17					
arborea		34?	Billings 1937	H	California

37. MORINGACEAE

MORINGA *x*=7					
pterygosperma (oleifera)	Drumstick Tree	28	Patel & N. 1937	VO	N.W. India
aptera	Nubian D.T.	—		MO	Egypt
concanensis	Concan D.T.	—		VO	India

39. CRUCIFERAE

Order of the Tribes with their Basic Numbers.

I Schizopetaleae: 5, 6, 9
II Lepideae: 6, 7, 8, 9, 12
III Alysseae: 6, 7, 8, 12
IV Arabideae: 5, 6, 7, 8, 9, 11, 15
V Brassiceae: 7, 8, 9, 10, 11, 12, 15
VI Heliophileae: 10, 11
VII Cremolobeae: 11

TRIBE I: SCHIZOPETALEAE

STENOPETALUM *x*=5					
lineare etc.		10	Manton 1932	—	Australia
LESQUERELLA *x*=5, 6, 9					
argentea	Bladder-pod	10	Manton 1932	H	C:U.S.A.
gracilis		12	,, ,,	—	W:N. Amer.
grandiflora		18	,, ,,	—	Texas, Mex.
mendocina		*c.* 50	,, ,,	—	Chile
SCHIZOPETALUM *x*=9					
walkeri		18	Manton 1932	H	Chile

TRIBE II: LEPIDEAE

HUTCHINSIA *x*=6				
petraea	12	Jaretzky 1929	H	Europe
procumbens	12, 24	Manton 1932	H	Temp.
BISCUTELLA *x*=6, 8, 9				
microcarpa (didyma)	12	Manton 1937	—	S. Spain
apula	16	,, ,,	—	S. Sp., Alg.
ciliata	16	,, ,,	—	S. It.—Casp.
depressa	16	,, ,,	—	Up. Egypt
lyrata	16	,, ,,	—	W. It.—Tun.
arvernensis etc.	18	,, ,,	—	Medit.
laevigata	18, 27, 36, 45, 54	,, ,,	H	C. & S. Eur.
species	81	,, ,,	—	Spain

COCHLEARIA $x=7$					
groenlandica		14	Gairdner, M. 1939	Sp.	N. & Arctic
oblongifolia		14	M. & S. 1935	V	,, ,,
alpina (*officinalis*)		28	Crane & G. 1923	Sp.	,, ,,
officinalis	Scurvy Grass	28	,, ,,	MSpVit C	,, ,,
micacea		34-36	,, ,,	—	,, ,,
glastifolia		38	Manton 1932	—	Europe
danica		42	Crane & G. 1923	V	N. & Arctic
anglica		37-50	,, ,,	MSp	,, ,,
COLUTEOCARPUS $x=7$					
reticulatus		14	Manton 1932	—	As. Min.
EUNOMIA (AETHIONEMA) $x=7$					
oppositifolia	Stone Cress	14	Manton 1932	H	Greece
iberidea		28	,, ,,	H	S.W. Asia
PELTARIA $x=7$					
turkmena		14	Manton 1932		C. Asia
alliacea	Shieldwort	28, 56	,, ,,	HV	S.E. Eur.
THLASPI $x=7$					
arvensis etc.		14	Manton 1932	—	Eur., N. As.
silicicum		14, 28	,, ,,	—	—
VOGELIA (NESLIA) $x=7$					
paniculata		14	Manton 1932	—	Eur., S.W. Asia
IBERIS $x=7, 11$					
amara	Rocket Candytuft	14, 16	Jaretzky 1932	H	Europe
gibraltarica		14	Manton 1932	H	Sp., Mor.
lagascana		14	,, ,,		Spain
umbellata		14	,, ,,	H	S. Europe
pinnata		16 ?	,, ,,		,,
pruiti		22	,, 1932		Sicily
semperflorens		$22, 44+f$	,, 1935*b*		S. Europe
saxatilis		$22+2f$	,, 1932		,,
sempervirens		22, 44	Simonet 1932*c*	H	S. Eur., A. Min.
corifolia		*c.* 50	Manton 1932		Spain
CAMELINA $x=7, 20$					
sativa	Gold of Pleasure	28	Baez-Major 1934	OT	Eur., Temp. As.
		40	Manton 1932		
		42	Jaretzky 1928a		
as *alyssum*		40	Manton 1932		Eur., Temp. As.
		42	Jaretzky 1928a		
microcarpa		40	Manton 1932	—	Asia

RHIZOBOTRYA (KERNERA) $x=7$					
alpina		14	Chiarugi 1933	—	S. Tyrol
KERNERA $x=8$					
saxatilis		16	Chiarugi 1933	H	Europe
CAPSELLA $x=8$					
bursa-pastoris	Shepherd's Purse	16, 32	Shull 1937	—	Temp.
LEPIDIUM $x=8$					
armoracium		16	Manton 1932	V	Abyss.
sativum	Common Cress	16	Jaretzky 1929	VO	S.W. Asia
campestre		16	Wulff 1939b		Europe
latifolium	Poor Man's C. Dittander	*c.* 24	Manton 1932	V	Eur., N. Afr. Mid. & N. Asia
densiflorum (*insinum*)	Pepperweed	32	,, ,,	—	Russia
apetalum		32	F. H. Smith 1938	—	N. America
cartilagineum		40	Manton 1932		Siberia
draba	Hoary Cress	64	,, ,,	SpV	E. Medit.
piscidium	Fish-poison C.	—		Vit	Pac. Islands
oleraceum	New Zealand C.	—		V	N. Zealand
CORONOPUS $x=8$					
didymus etc.	Wart Cress	32	Manton 1932	H	Cosmop.
BIVONAEA (IONOPSIDIUM) $x=8$					
saviana		32	Corti 1930b	—	Italy
TEESDALIA $x=9$					
nudicaulis		36	Manton 1932	—	Eur., Medit.
IONOPSIDIUM $x=12$					
acaule	Diamond Fl.	24	Corti 1930b	H	Portugal
AETHIONEMA $x=(11), 12$					
cristatum etc.	Stonecress	22, 24	Manton 1932	—	S.W. Asia
persicum etc.		36	,, ,,	—	,,
grandiflorum		48	Jaretzky 1932	H	Caucasus
ovalifolium		48	,, ,,	H	S.W. Asia
cordatum		60	Manton 1932	—	,,
HYMENOPHYSA $x=12$					
pubescens		24	Manton 1932	—	Siberia

TRIBE III: ALYSSEAE

FARSETIA (FIBIGIA) $x=6, 7, 8$					
ramosissima		12	Hagerup 1932	—	Trop. Afr.
eriocarpa		14, 16	Manton 1932	—	As. Min., Syr.

MATTHIOLA $x=6, 7$					
odoratissima		12	Manton 1932	—	Caucasus
tatarica		12	„ „	—	E. Eur., A. Min
tristis		12	„ „	—	Medit.
valesiaca (*varia*)		12	„ „	—	It., Greece
fenestralis		14	„ „	H	Crete
parviflora		14	„ „		Medit.
sinuata		14	„ „	—	„
incana	Brompton Stock, Gilliflower	14	Westergaard 1936a	H	„
		14	Straub 1937		
		14+*f*	Frost 1931		
tricuspidata		14	Jaretzky 1936, T.	H	Medit.
bicornis	Evening St.	14	Manton 1932	H	Gr., A. Min.
CHEIRANTHUS (ERYSIMUM) $x=7$					
cheiri	Wallflower	14	Sakai 1935	H	S. Europe
cinereus		28	Jaretzky 1932	—	Canary Is.
menziesii		28	Manton 1932	H	W:N. Amer.
tenuifolius		*c.* 28	„ „	—	Madeira
senoneri		*c.* 28	Jaretzky 1932	—	Ægean
mutabile		*c.* 42	Manton, T. 1931	H	Mad., Can.
allionii (*E. asperum*)	Siberian W.	42	Jaretzky 1932	H	N. America
CHORISPORA $x=7$					
tenella		14	Manton 1932	H	Caucasus
EUCLIDIUM $x=7$					
syriacum etc.		14	Jaretzky 1932	—	Pers., Afgh.
LUNARIA $x=7$					
annua	Honesty	28+2*f*	Manton 1932	H	Europe
rediviva		28+2*f*?	„ „		„
RICOTIA $x=7$					
lunaria		28	Manton 1932	H	Syr., Egypt
THYSANOCARPUS $x=7$					
curvipes		28	Manton 1932	—	W:N. Amer.
MALCOMIA $x=7, 8, 10$					
africana		14	Jaretzky 1928a		S. Eur.
		28	Manton 1932	—	S.W. As.
maritima	Virginia Stock	14-16	„ „	H	S. Europe
flexuosa		16	Jaretzky 1932	—	Greece
chia		32	Manton 1932	H	Medit.
littorea		20	„ „	H	„
HESPERIS $x=7, 12, 13$					
violacea		14	Manton, T. 1931	—	A. Min.
matronalis	Dame's Violet	24, 28	„ „	H	Eur., N. As.
as *sylvestris*		26	„ 1932		
as *runcinata*		24	„ „		

HESPERIS (*cont.*)					
lutea		28	Manton, T. 1931	—	Japan
tristis		28	Jaretzky 1928a	H	S. Europe
EROPHILA (DRABA) $x=7$?					
verna	Whitlow	14, 24, 40	Winge 1933	H	Eur., S.W. Asia
(*vulgaris*)	Grass	30, 64 (94)	„ „		
		24, 40	Griesinger 1935		
DRABA $x=8$					
cinerea		48	Heilborn, T. 1936	—	Siberia
dahurica (*hirta*)		64	Ekman 1930	—	Arctic
sachalinensis (*incana*)		64	R. Yamazaki 1936	—	„
magellanica		48, 64, 80	Heilborn 1927	—	Magellan
arabisans		96	F. H. Smith 1938	H	N. America
olympica		—		H	Greece
SCHIEVERECKIA $x=8$					
bornmülleri etc.		16	Manton 1932	—	As. Min.
VESICARIA $x=8$					
graeca etc.		16	Manton 1932	—	Italy, Gr.
BRAYA $x=8$					
alpina		32	Manton 1932	—	Alp., Arc., Tibet
CLYPEOLA $x=8$					
jonthlaspii		32	Jaretzky 1928a	H	Medit.
ALYSSUM $x=8$					
campestre		16	Manton 1932	—	Eur., S.W. Asia
cuneifolium (*montanum*)		16	„ „	—	„ „
dasycarpum		16	„ „	—	Afgh., Pers.
edentulum (*gemonense*)		16	„ „	—	Europe
montanum		16	„ „	H	Eur., S.W. Asia
saxatile (*arduini*)		16	„ „	H	Europe
rostratum		16	„ „	H	Gr., A. Min.
pyrenaicum		32	„ „	H	Pyren.
repens		32	„ „	H	Europe
other species			Jaretzky 1932		
BERTEROA (ALYSSUM) $x=8$					
incana etc.		16	Wulff 1939	H	Europe
LOBULARIA (ALYSSUM) $x=12$					
maritima	Sweet Alison	24	Jaretzky 1928a	H	Europe

TRIBE IV: ARABIDEAE

ARABIDOPSIS (SISYMBRIUM) $x=5$					
thaliana		10	Jaretzky 1928a	—	Europe

STENOPHRAGMA $x=5, 7, 8$					
thalianum		10	Jaretzky 1928a	—	Spain
suecicum		28	Manton 1932	—	Europe
pumilum		32	„ „	—	S.W. Asia
ARABIS, $x=6, 7, 8$					
dentata		12	F. H. Smith 1938	—	N. America
laevigata		14	„ „	—	„
lyrata		16	„ „	—	„
alpina	Rock Cress	16	Sakai 1935	H	N. Am., Eur.
iwatensis		32	M. & S. 1935	—	Japan
serrata		40	Sakai 1935	—	„
other species			Jaretzky 1928a	—	—
BUNIAS $x=7$					
erucago		14	Melinossi 1937	—	Medit.
orientalis		14	Resende 1937a	H	E. Eur.
		42	Jaretzky 1928		As. Min.
MYAGRUM $x=7$					
perfoliatum		14	Jaretzky 1932	—	Eur., S.W. Asia
TAUSCHERIA $x=7$					
lasiocarpa		14	Manton 1932	—	Him., Casp.
EUTREMA (ALLIARIA) $x=7$					
wasabi		28	Sugiura 1936b	—	E. Sib., Jap.
edwardsi		42	S. & S. 1941	—	Arctic
GOLDBACHIA $x=7$					
laevigata		28	Manton 1932	H	As. Minor
SISYMBRIUM $x=7$					
altissimum		14	F. H. Smith 1938	—	N. America
corniculatum		14	Baez-Major 1934	V	Spain
officinale	Bank Cress	14	Wulff 1937b	V	Eur., N. Afr.
		14+4*f*	Baez Major 1934		
supinum		42	„ „ „		Eur., Medit.
hirsutum		56	„ „ „	V?	Turkestan
alliaria	Garlic Wort	*c.* 42	Jaretzky 1932	V	Eur., S.W. Asia
DESCURAINIA (SISYMBRIUM, SOPHIA) $x=7$					
obtusa		14, 42	Baldwin & C. 1940	—	N. America
pinnata		14, 28, 42	„ „	—	Chile
richardsonii (*canescens*)		14, 28, 42	„ „	—	N. America
sophia		28, 56	Manton 1932	—	Temp.
ISATIS $x=7$					
tinctoria	Woad	28	Manton 1932	D	Eur., S.W. Asia
indigotica		—		DV	China

RYSIMUM $x=7, 8$					
inifolium		14	Manton 1932	—	Spain
heiranthoides	Treacle Mustard	16	„ „	—	Eur., N. Am.
uspidatum		16	„ „	—	Gr.—Persia
erowskianum		32-36	„ „	H	Cauc., Afgh.
urpureum		*c.* 40	„ „	H	Arm., Syr.
upestre		*c.* 56	„ „		As. Minor
anescens		72	„ „	—	S.Eur.,Cauc.
ARDAMINE $x=7, 8, x_2=15$					
sarifolia		14	Lawrence 1932	—	Europe
		16	Manton 1932		
lpina		16	„ „	—	Europe
mara	Bitter Cress	16	„ „	V	Eur., N. As.
irsuta	Lambs' Cress	16	„ „	V	Temp. & Subtrop.
ratensis	Lady's Smock	30	Lawrence 1932	HV	Temp. Eur.
	Cuckoo Fl.	*c.* 32, 64	Manton 1932		
		64	Flovik 1940		
entaphylla		48	Schwarzenbach 1922	—	Chile
ennsylvanica		64	F. H. Smith 1938	—	E: U.S.A.
henopodiifolia		64	Manton 1932	—	S. America
ulbifera		*c.* 96	„ „	—	Europe
iphylla	Pepper Root	—		Sp.	N. America
otundifolia	Cuckoo Fl.	—		V	„
lacialis	Mag. Scurvy Gr.	—		Vit	Magellan
ARDAMINOPSIS $x=8$					
alleri		16	Jaretzky 1928a	H	Europe
RMORACIA (COCHLEARIA) $x=8$					
apathifolia	Horse Radish	32	Manton 1932	SpVit	Europe
ARBAREA $x=8$					
hodoensis		16	M. & S. 1935	—	Japan
atens		16	„ „	—	„
raecox (verna)	American C.	16	Jaretzky 1932	V	Europe
ulgaris	Winter Cress	16	Manton 1932	—	Eur., Asia
inor		16	„ „	—	A. Min., Syr.
ASTURTIUM $x=8$					
slandicum		16	Jaretzky 1932	—	North Reg.
as *palustre*		32	Scheerer 1939		„ „
ylvestre		32	Manton 1932	—	N. Temp.
fficinale	Water Cress	32, 48, 64	„ 1935a	V	„ „
UBRETIA $x=8$					
columnea		16	Jaretzky 1928a	—	Italy
deltoidea		16	Sakai 1935	H	It., A. Min.
edentula		16	Jaretzky 1928a	—	Kurdistan
libanotica		16	„ „	—	Lebanon

DENTARIA $x=8$				
macrophylla	16	Morinaga & F. 1931a	—	Amur
RORIPA $x=8$				
austriaca etc.	16	Manton 1932	—	E. Eur., As. Min.
sylvestris	32	,, ,,	—	N. Temp.
TURRITIS $x=8$				
glabra	32	Jaretzky 1928	—	Eur., Sib., Him.
SISYMBRELLA $x=8$				
aspera	16	Manton 1932	—	S. Eur.
ONURIS $x=9$				
graminifolia	18	Manton 1932	—	Chile
XERODRABA $x=11$				
pycnophylloides	22	Manton 1932	—	Patagonia

TRIBE V: BRASSICEAE

CALEPINA $x=7$				
irregularis (*corveni*)	14 42	Manton, T. 1931 Jaretzky 1932	—	C. Eur., Persia
CONRINGIA $x=7$				
planisiliqua	14	Manton 1932	—	W. Asia
COSSONIA (RAFFENALDIA) $x=7$				
africana	14	Manton 1932	H	Alg., Mor.
MORISIA $x=7$				
hypogaea (*monantha*)	14	Manton 1932	H	Cors., Sard
MORICANDA $x=7$				
arvensis	28	Manton 1932	H	Medit.
RAPISTRUM $x=8$				
rugosum	16	Baez-Major 1934	—	Eur., S.W As.
REBOUDIA (ERUCARIA) $x=8$				
erucarioides	16	Manton 1932	—	Algeria
CARICHTERA $x=8$				
annua	16, 32	Manton 1932	—	Medit.?
ERUCASTRUM $x=8, 15$				
elatum etc.	30	Manton 1932	—	Morocco
abyssinicum etc	32	,, ,,	—	Arabia

CRAMBE $x=15$					
filiformis		30	Manton 1932	—	Patag., Chile
fruticosa		30	„ „	—	Madeira
hispanica	Spanish Colewort	60	„ „	HV	Medit.
maritima	Sea Kale	60	„ „	V	Europe
abyssinica		90	„ „	—	Abyssinia
orientalis					As. Min., Persia
v. *koktebelica*		30	„ „	VSp	
v. *juncea*		*c.* 120	„ „		
tartarica	Tartar Bread Pl.	60, 120	„ „	VR	E. Eur., N. Asia
cordifolia	Colewort	*c.* 120	„ „	HV	Pers., Cauc.
grandifolia		*c.* 120	„ „	V?	As. Min.
SUCCOWIA $x=8, 9$					
balearica		32	Jaretzky 1929	—	Balearics
		36	Manton, T. 1931		
SINAPIS (BRASSICA) $x=8, 9, 12$					
nigra	Black Mustard	16	Nagai & S. 1930	SpO	*cult*
sinapistrum	Charlock	18	Sikka 1940	—	Europe
alba	White M.	24	Karpechenko 1924a	SpO	Eur.—Ind.
BRASSICA $x=9, 10, 11, 12.$ $x_2=17, 18, 19$					
$x=9$					
alboglabra		18	Karpechenko 1924a	V	S.W. Asia
balearica		18	Manton, T. 1931	V	Balearics
insularis		18	„ 1932		Sard.
rupestris		18	„ 1932		Sicily
silvestris (*oleracea*)		18	Griesinger 1937	V	*cult*
oleracea	Kale (diploid)	18 (36)	Howard 1939	V	„
	Cauliflower	18	Karpechenko 1924a	V	
	Brussels Sprouts	18	„ „	V	
	Kohl Rabi	18	„ „	V	
		(36)	Pirschle 1942		
	Cabbage	18	Karpechenko 1924a	V	
		(36)	Pirschle 1942		
		(36, 72)	Schtschavinskaja 1937a		
$x=10$					
chinensis	Shantung C. Pak-choi	20	Richharia 1937b	V	E. Asia
japonica	Curled M.	20	Shimotomai 1925	V	Japan
narinosa		20	Nagai & S. 1930	V	China
pamirica (*campestris*)		20	Karpechenko 1924a	O	Afghanistan
pekinensis	Pet—sai	20	Richharia 1937b	V	China
tournefortii		20	Sikka 1940	V?	Medit., Ind., S.W. As.

BRASSICA (*cont.*)					
trilocularis		20	Alam 1936		Himalayas
campestris (*diploid*)	Rape (diploid)	20	Karpechenko 1924a	VO	*cult*
v. *toria*		20 (30)	Ramanujam 1940	V	
rapa	Turnip	20	Morinaga 1929	R	*cult*
		(40)	Schlösser 1936		
$x=11$					
elongata		22	Manton 1932	V	Cauc., Pser
$x=12$					
monensis	Isle-of-Man C.	24	Sikka 1940	V	W. Europe
wrightii		24	,, ,,	—	—
cheiranthos		48	Wright 1936	—	W. Eur., N. Afr.
$x_2=(8+9), (8+10), (9+10), x_3=(8+9+10)$					
carinata	Abyssinian C.	34	Karpechenko 1930	V	Abyss.
		34	Richharia 1937a		
juncea	Rai, Indian M.	36	Alam 1936	OSp	S. Asia
campestris × *nigra*		18 (36)	Ramanujam & S. '43	—	*expt.*
napus	Rape (tetraploid)	38	Nagai & S. 1930	OV	*cult*
napobrassica	Swede, Rutabaga	38	Howard 1938	R	,,
		38 (57, 76)	Morinaga & K. 1937	R	,,
rugosa	Chinese M.	38	Sikka 1940	SpV	E. Asia
rapo-oleracea	Kale (tetraploid)	38	Crane & T. 1942	V	*cult*
			Crane 1943		
chinensis-carinata		(54)	Howard 1942	V	*cult*
napo-campestris		(56, 58?)	Frandsen & W. 1932	V	,,
CAKILE $x=9$					
maritima	Sea Rocket	18	Wulff 1937b	V	Eur., S.W. Asia
RAPHANUS $x=9$					
caudatus	Rat-tailed R.	18	Manton 1932	V	*cult*
landra	Landra	18	,, ,,	V	Italy
maritimus	Spanish R.	18	,, ,,	V	W. Europe
raphanistroides (*macropodus*)	Japanese R.	18	Sisa 1929	V	Korea
raphanistrum	Jointed Charlock	18	Karpechenko 1928	Sp	Europe
sativus	Radish	18	Karpechenko 1924a	V	*cult*
		(36)	Simonet 1938		
RAPHANO-BRASSICA $x=9$					
sativus-oleracea		(18, 36)	Karpechenko 1924b, 1927	V	*cult*
DIPLOTAXIS $x=7, 9, 11$					
erucoides		14	Manton 1932	—	Medit., A. Min.

DIPLOTAXIS (*cont.*)					
catholica		18	Manton 1932	—	S. Eur., N. Afr.
tenuifolia		22	„ „	—	Eur., Med., As. Min.
muralis		42	Maude 1940	—	Europe
ERUCA $x=11$					
cappadocica		22	Manton 1932	—	As. Min.
orthosepala		22	Jaretzky 1932	—	Spain
sativa	Rocket Salad	22	U. et al. 1937	OV	Med., W. As.
ORYCHOPHRAGMUS $x=12$					
violaceus		24	Manton 1932	—	China

TRIBE VI : HELIOPHILEAE

HELIOPHILA $x=10, 11$					
pilosa		20	Jaretzky 1932	H	S. Africa
crithmifolia		22	„ „	—	„

TRIBE VII : CREMOLOBEAE

MENONVILLEA $x=11$					
gayi		22	Manton 1932	—	Chile

40. VIOLACEAE

VIOLA $x=6, 10, 11, 13$. $x_2=17$. $x_3=27$					
$x=6$					
alliariaefolia		12	Miyaji 1929	—	Japan
atriplicifolia (*purpurea-venosa*)		12	Clausen, T. 1936	—	N. America
biflora		12	Miyaji 1929	H	N. Temp
eriocarpa		12	Gershoy 1928	H	N. America
hastata		12	„ 1934	H	„
lobata	Moosehorn V.	12	„ „	H	Calif.
ocellata	Pinto Violet	12	„ „	H	„
pedunculata	Calif. V.	12	„ „	H	W:N. Amer.
pubescens	Downy V.	12	„ „	H	N. America
rotundifolia		12	„ „	H	„
scabriuscula		12	„ „	—	„
uniflora		12	„ „	—	Brazil
venosa (*purpurea*)		12	„ „	H	N. America
bisseti		24	Miyaji 1929	—	Japan
boissieriana (*boissieuana*)		24	„ „	—	„
canadensis	Canada V.	24	Gershoy 1934	H	N. America
chaerophylloides		24	Miyaji 1929	—	Japan
eizanensis (*dissecta*)		24	„ „	—	N. Japan
fibrillosa		24	„ „	—	Japan
glabella		24	Gershoy 1934	—	W:N. Amer.
hirtipes		24	Miyaji 1929	—	China

VIOLA (*cont.*)

jooi (*missouriensis*)		24	Miyaji 1929	—	Transylv.
lanceolata		24	Gershoy 1934	H	N. America
macloskeyi		24	Clausen, T. 1936	H	Oregon
maximowicziana		24	Miyaji 1929	—	Japan
miyajiana		24	,, ,,	—	,,
multifida (*pinnata*)		24	,, ,,	—	Eur., N. As.
obtusosagittata		24	,, ,,	—	Japan
occidentalis		24	Clausen, T. 1936	—	N. America
okuboi		24	Miyaji 1929	—	Japan
orbiculata	Darkwood V.	24	Gershoy 1934	H	W:N. Amer.
pallens		24	,, ,,	H	Montenegro
patrini		24	Miyaji 1929	—	Russ., N. Asia, Him.
phalacrocarpa		24	,, ,,	—	Japan
phalacrocarpoides		24	,, ,,	—	,,
primulifolia		24	Gershoy 1934	H	E:N. Amer.
pseudojaponica		24	Miyaji 1929		China
purpurea	Goosefoot V.	24	Gershoy 1934	H	Caucasus
renifolia		24	,, ,,		N. America
rugulosa	Cheyenne V.	24	,, ,,	H	,, ,,
selkirkii	Wilderness V.	24	,, ,,	H	Subarctic
shikokiana		24	Miyaji 1929	—	Japan
takedana		24	,, ,,	H	,,
tanakaeana		24	,, ,,	H	,,
vaginata		24	,, ,,	H	,,
variegata		24	,, ,,	H	China
verecunda		24	,, ,,	H	Japan
violacea (*alba*)		24	,, ,,	H	Europe
yezoensis		24	,, ,,	H	Japan
palustris (*epipsila*)		24	J. Clausen 1926		N. Temp.
	Marsh V.	48	,, 1931c		
sarmentosa		24	,, 1929		W:N. Amer.
		48	Gershoy 1934		
praemorsa	Canary V.	36	,, ,,	H	California
lutea		48	,, ,,	H	Brazil
munbyana	Algerian V.	48	Griesinger 1937	H	Algerian
nuttallii		48	J. Clausen, T. 1936		W:N. Amer.
pinnata		48	Gershoy 1934	H	Eur., N. As.
hallii	Oregon V.	60-72	,, ,,	H	W:N. Amer.
albescens (*mandschurica*)		72	Miyaji 1930	H	N.E. Asia
kitaibeliana	Iberian V.	14, 16 24, 36, 48	J. Clausen 1931d		S. Europe

$x = 10$

adunca (*canina*)	Hook V.	20	Gershoy 1934	—	N: U.S.A.
ambigua		20	,, ,,	—	Balearics
arenaria	Sand V.	20	,, ,,	—	N. America
collina		20	,, ,,	—	Europe
conspersa	Amer. Dog. V.	20	,, ,,	—	N. Temp.

VIOLA (*cont.*)

elegantula	Bosnian V.	20	J. Clausen 1931d	—	Balkans
hirta	Hairy V.	20	„ 1931c	H	Eur., N. As.
mirabilis		20	„ „	—	„ „
odorata	Sweet V.	20	„ „	HP	O.W. Temp.
orbelica		20	Griesinger 1937	—	S. Europe
perinensis		20	„ „	—	Macedonia
rostrata	Longspur V.	20	Gershoy 1934	—	N. America
sachalinensis		20	Miyaji 1929	—	N. Temp.
samothrakii		20	Griesinger 1937	—	N. Temp.
stagnina (*persicifolia*)		20	J. Clausen 1931c	—	Europe
striata	Striped V.	20	Gershoy 1934	H	N. America
		20+*f*	J. Clausen 1929		
thibaudieri		20	Miyaji 1929	—	Japan
uliginosa		20	J. Clausen 1929	—	Europe
yakusimana		20	Miyaji 1929	—	Japan
sylvestris		20	J. Clausen 1931c	—	N. Eurasia
as *sylvatica*		40	Gershoy 1934		
as *riviniana*		40	„ „		
bertolinii		40	Griesinger 1937	—	Corsica
calcarata	Spurred V.	40	„ „	H	Europe
canina	Dog V.	40	Bruun 1932a	H	N. Temp.
		40-47	J. Clausen 1931b		
contempta		40	Fothergill 1944	—	N.W. Eur.
elatior	Tall V.	40	Gershoy 1934	—	T. Eurasia
pumila (*pratensis*)		40	„ „	—	Europe
zoysii (*calcarata*)		40	Griesinger 1937	—	„
howelli		*c.* 80	Gershoy 1934	—	Oregon
orphanides		20, 21, 22	J. Clausen 1931d	—	Macedonia
$x=11$					
cornuta	Horned V.	22	J. Clausen 1931d	H	Europe
orthoceras		22	„ 1927	—	Caucasus
blanda	Sweet White V.	44	Gershoy 1934	H	E:N. Amer.
incognita		44	„ „	H	N. America
$x=13$					
alpestris		26	J. Clausen 1931d	—	Switz.
dacica (*declinata*)		26	Griesinger 1937	—	Hungary
diffusa		26	Miyaji 1929	—	Him., China
tricolor	Pansy, Heartsease	26	J. Clausen 1931c	H	N. Temp.
lutea		26-53	Fothergill 1938	—	*nat. pop.*
$x_2=17$ (6+11)					
arvensis	Field Pansy	34	J. Clausen 1931c	—	Europe
obtusifolia etc.		34	Fothergill 1944	—	Europe
raffinesquii		*c.* 34	Gershoy 1934	—	N. America
rothomagensis		34	J. Clausen 1931c	—	Europe
$x_3=27$ (6+10+11), 28					
affinis	Leconte V.	54	Gershoy 1934	H	N. America
brittoniana	Breton V.	54	„ „	H	„ „

VIOLA (*cont.*)					
cucullata	Bogbice V.	54	Gershoy 1934	H	N. America
egglestoni		54	,, ,,	—	,, ,,
emarginata		54	,, ,,	—	,, ,,
fimbriatula	Fringed V.	54	,, ,,	H	,, ,,
hirsutula	Appalachian V.	54	,, ,,	H	,, ,,
langlosii	Bayon V.	54	,, ,,	H	,, ,,
latiuscula		54	,, ,,	—	,, ,,
lovelliana		54	,, ,,	H	,, ,,
missouriensis		54	,, ,,	H	,, ,,
palmata		54	,, ,,	H	,, ,,
papilionacea		54	,, ,,	—	,, ,,
pedatifida (*delphinifolia*)		54	,, ,,	—	,, ,,
sagittata		54	,, ,,	H	,, ,,
septemloba		54	,, ,,	—	,, ,,
septentrionalis		54	,, ,,	—	,, ,,
soriora		54	,, ,,	—	,, ,,
triloba		54	,, ,,	H	,, ,,
viarum	Ozark V.	54	,, ,,	H	,, ,,
villosa (*carolina*)		54	,, ,,	H	,, ,,
pedata	Birdsfoot V.	56	,, ,,	H	,, ,,
HYBANTHUS (IONIDIUM) $x=12$					
"*parviflorus*"		24	Heilborn 1926	—	—
suffruticosus		—		M	India

41. RESEDACEAE

RESEDA $x=6, 7, 10.$ $x_2=(6+7)$					
odorata	Mignonette	12	Oksijuk 1929, 1935	HP	N. Africa
phyteuma		12	Eigsti 1936	—	Med., As. Minor
alba		20	Oksijuk 1935	H	Eur., S.W. Asia
lanceolata		24	Eigsti 1936		Spain
		24	Oksijuk 1935	D	Eur., S.W. Asia
luteola	Dyer's Greenweed	24, 26	Eigsti 1936		
virgata		28	,, ,,	—	Sp. & Port.
complicata		28, 30	,, ,,	—	Spain
lutea		48	,, ,,	—	Eur., S.W. Asia
stricta		48	,, ,,	—	Algeria
ASTROCARPUS $x=10$					
sesamoides		20	Oksijuk 1935	H	Spain

42. POLYGALACEAE

POLYGALA $x=?$					
triflora (*erioptera*)		38	Hagerup 1932	—	As., Trop. Africa

POLYGALA (*cont.*)					
vulgaris		48, 56	Wulff 1938	—	Eur., As. Minor
arenaria		—		M	Trop. Afr.
butyracea	Malukang	—		FO	„ „
myrtifolia		—		H	S. Africa
senega	Senega	—		M	N. America
COMESPERMA					
spinosum		—		H	Australia
KRAMERIA					
triandra	Rhatany Root	—		M	Peru

45. CRASSULACEAE

SEDUM	$x=4, 5, 7$. $x_2=9, 11, 12$. $x_3=16$?				
pusillum		8	Baldwin 1940	H	N. America
stellatum		10	„ „	H	S. Europe
acre		16, 48	Wulff 1937b	H	Eur., N. Asia
ternatum		16, 24, 32, 48	Baldwin 1942b	H	N. America
tatarinowii		20	„ 1937	H	China
nuttallianum		20	„ 1940	H	S.C.: U.S.A.
ewersii		22	„ 1937	H	Him., Sib.
populifolium		22	„ „	H	Siberia
rhodiola	Roseroot	22	Toyohuku 1935	H	North, Arct.
verticillatum		22	„ „	H	Kamch.
yezoense		22	„ „	H	Japan
maximum		24, 48	Baldwin 1937	H	Eur., Cauc.
coeruleum		28	Sugiura 1936a	H	Medit.
spurium		28	Baldwin 1935	H	Caucasus
kamtschaticum		32, 48, 64	Toyohuku 1935	H	E. Asia
reflexum		34, 68, *c.* 112	„ „	H	Europe
purpureum (*telephium*)		36	Baldwin 1935	H	Eur., N. As
telephium		36, 48	„ 1937	H	„ „
hispanicum		40	„ 1935	H	S. Eur., As. Minor
alboroseum		48, 50	T. 1938	H	Jap., China
spectabile		48, 49, 51	„	H	„ „
sieboldii		50	Baldwin 1937	H	„ „
alba		64	„ 1935	H	Arabia
pachyphyllum		64	T. 1938	H	Mexico
palmeri		68	„	H	„
aizoon		128	Toyohuku 1935	H	Sib., Japan
CRASSULA	$x=7, 8, 17$				
barbata etc. (15 species)		14	Baldwin 1936b	H	S. Africa
sarcocaulis		28	„ „	—	„
arborescens		42	„ „	—	„
nodulosa		56	„ „	—	„
multicava		*c.* 56	„ „	—	„

CRASSULA (*cont.*)					
corallina		16	Baldwin 1936b	H	S. Africa
cordata		16	,, ,,	H	,,
pharnaceoides		16	,, ,,	H	—
pseudolycopodioides		16	,, ,,	—	S.W. Africa
remotifolia		16	W.-Lindschau, T. 1938	—	—
tetragona		48	Baldwin 1936b	—	S. Africa
nana		34	,, ,,	—	,,
sarmentosa		*c.* 60	,, ,,	—	,,
spathulata		*c.* 74	,, ,,	—	,,
TILLAEA *x*=8					
pharnaceoides		16	Skovsted 1934b	—	Trop. Afr.
SEDELLA *x*=9					
pumila etc.		18	Baldwin 1940	—	California
DIAMORPHA *x*=9					
cymosa		18	,, ,,	—	N. America
COTYLEDON *x*=12, 17					
malacophylla etc.		24	Toyohuku 1936	—	Siberia
ECHEVERIA (COTYLEDON) *x*=?					
agavoides		112	W.-Lindschau, T. 1938	H	Mexico
SEMPERVIVUM *x*=15, 18					
annuum		30	Skovsted 1934b	—	Canaries
tortuosum		30	,, ,,	—	,,
arachnoideum		60	,, ,,	H	S. Europe
arboreum		60	,, ,,	—	Medit.
berthelotianum		36	,, ,,	—	Teneriffe
ciliatum		36	,, ,,	—	Canaries
undulatum		*c.* 72	,, ,,	—	,,
KALANCHOË (BRYOPHYLLUM & KITCHINGIA) *x*=17, 18, 20					
x=17					
aliciae		34	Baldwin 1938	H	Madag.
aromatica		34	,, ,,	H	,,
blossfeldiana		34	,, ,,	H	,,
daigremontiana		34	,, ,,	H	,,
fedtschenkoi		34	,, ,,	H	,,
gastonis-bonnieri		34	,, ,,	H	,,
laxiflora		34	,, ,,	H	,,
longiflora		34	,, ,,	H	Africa
marmorata		34	,, ,,	H	,,
miniata		34	,, ,,	H	Madag.
peltata		34	,, ,,	H	,,
prolifera	Resurrection Pl.	34	,, ,,	M	S. Africa
rotundifolia		34	,, ,,	H	Africa
scandens		34	,, ,,	H	—

KALANCHOË (*cont.*)					
tomentosa		34	Baldwin 1938	H	Madag.
velutina		34	,, ,,	H	Africa
waldheimi		34	,, ,,	H	Madag.
laciniata		34, 68	,, ,,	H	Tropics
verticillata		68	,, ,,	H	Madag.
synsepala		72	,, ,,	H	,,
crenata		102	,, ,,	H	Trop. Afr.
species (U.S:P.I.)		*c.* 170	,, ,,	H	—
		c. 500	,, ,,	H	—
x=18					
beharensis		36	,, ,,	H	Madag.
hildebrandtii		36	,, ,,	H	,,
x=20					
pinnata (*calycina*)		40	,, ,,	M	Tropics
uniflora		40	,, ,,	H	Madag.

47. SAXIFRAGACEAE

VAHLIA *x*=6, 9					
oldenlandioides		12	Skovsted 1934b	—	Trop. As. & Africa
viscosa		18	Raghavan & S. 1941	—	,, ,,
CHRYSOSPLENIUM *x*=6, 7					
tetrandrum		24	Flovik 1940	H	North Reg.
oppositifolium		42	Schoennagel, T. 1931	H	Eur., N. As., India
alternifolium	Gold Sax.	48	Skovsted 1934b	H	North Reg.
ASTILBE *x*=7					
japonica	Spiraea	14	Skovsted 1934b	H	Japan
HEUCHERA *x*=7					
americana	Am. Alum-Root	14+4*f*	Skovsted 1934b	H	N. America
cylindrica		14	,, ,,	H	W:N. Amer.
hispida		14	,, ,,	H	N. America
micrantha		14	,, ,,	H	W:N. Amer.
rubescens		14	Schoennagel, T. 1931	H	,, ,,
sanguinea	Coral Bells	14+3*f*	Skovsted 1934b	H	N. Mexico
villosa		14+1*f*	,, ,,	H	N. America
TELLIMA *x*=7					
grandiflora	Alaska Fringe-cup	14	Skovsted 1934b	—	W:N. Amer.
TOLMIEA *x*=7					
menziesii		28	Skovsted 1934b	H	N.W:N. Am.

TIARELLA $x=7$					
cordifolia	Foam-flower	14	Schoennagel, T. 1931	H	E.N. Amer.
polyphylla		14	,, ,,	H	Himalayas
		18 ?	M. & S. 1935		
SAXIFRAGA $x=7, 8, 9, 11, 13$					
$x=7$ (14)					
aizoon		28	Skovsted 1934b	H	N.T., Arct.
cochlearis	Snail S.	28	,, ,,	H	S. Europe
cotyledon	Jungfrau S.	28	,, ,,	H	Europe
cuneifolia	Kidneyleaf S.	28	,, ,,	H	S. Europe
geum		28	,, ,,	H	W. Europe
hostii		28	,, ,,	H	S. Europe
ligulata		28	,, ,,	—	Himalayas
nivalis	Snowball S.	28	,, ,,	—	N.T., Arct.
stellaris	Star S.	28	,, ,,	—	N.T., Arct.
hirculus etc.		28	S. & S. 1938	—	Altai
pensylvanica		28, 42, 56	Burns 1942	—	N. America
crassicarpa		56	Böcher 1938a	—	,, ,,
forbesii		56	Burns 1942	—	N. Amer.
foliosa (*androsacea*)		56	Böcher 1938a	—	Eur., Med.
groenlandica (*caespitosa*)		64	Harmsen 1939	—	N.T., Arct.
		56, 65	Skovsted 1934b		
		80	Flovik 1940		
exarata		*c.* 68	Skovsted 1934b	—	S. Europe
hieracifolia		112	Flovik 1940	—	N.T., Arct.
		c. 80	S. & S. 1938		
bronchialis		*c.* 150	Skovsted 1934b	—	,, ,,
$x=8$					
nipponica		16	Sakai 1934	—	Japan
sachalinensis		16	,, ,,	—	Sakhalin
		40	M. & S. 1953		
melaleuca		40	S. & S. 1938	—	Altai
bronchialis		48	Sakai 1935	—	N. Temp.
		48, 49	Philp 1934a		Arctic
granulata		46-60	Skovsted 1934b	—	Europe
petraea		64	,, ,,	—	S. Europe
rosacea (*hypnoides*)		64	Philp 1934a	—	Europe
$x=9$					
cymbalaria	Ivyleaf S.	18	Skovsted 1934b	—	A. Min., Persia
sarmentosa		36	,, ,,	—	China, Jap.
as *stolonifera*		36, 54	Okabe 1937		
$x=11$					
adscendens (*altifida*)		22	Melchers 1935	—	W:N. Amer.
	Summer S.				
micranthidifolia		22	Skovsted 1934b	—	S.E.: U.S.A.
mutabilis		22	M. & S. 1935	—	Japan
rotundifolia		22	Skovsted 1934b	—	Gr., Cauc.
tellimoides		22	,, ,,	—	Japan

SAXIFRAGA (*cont.*)					
tridactylites		22	Melchers 1935	—	Eur., N.Afr. S.W. As.
hypnoides		*c.* 44	Skovsted 1934b	—	Europe
irrigua		44	,, ,,	—	Asia Minor
ajugaefolia (*perdurans*)		66	,, ,,		Transylv.
tenella		66	,, ,,	—	S. Europe
x=13					
aizoides		26	Skovsted 1934b	—	N.T., Arct.
marginata	Horn-rim S.	26	,, ,,	H	Italy
rivularis		26	Flovik 1940	—	N.T., Arct.
sancta		26	Skovsted 1934b	H	Gr., A. Min.
stribrnyi		26	,, ,,	—	C. Europe
oppositifolia		26	,, ,,	H	N.T., Arct.
PARNASSIA *x*=9					
palustris	Grass of Parnassus	18	M. & S. 1935	H	N.T.
		18, 27, 36, 54	Erlandsson, L. & L. 1942		
obtusiflora		36	S. & S. 1941	H	Arctic
BOYKINIA *x*=11					
tellimoides		22	Skovsted 1934b	—	Japan
FRANCOA *x*=13					
sonchifolia		52	Schoennagel, T. '31	H	Chile
RODGERSIA *x*=?					
podophylla		30	Skovsted 1934b	H	Japan
tabularis		*c.* 36	,, ,,	H	China

48. DROSERACEAE

DROSOPHYLLUM *x*=6					
lusitanicum		12	Behre 1929	CH	Port., Mor.
DROSERA *x*=10					
intermedia		20	Behre 1929	CH	Eur., N.Am.
rotundifolia	Roundleaf S.	20	,, ,,	CBM	,, ,,
anglica	English S.	40	Rohweder 1937	C	Europe
capensis	Cape Sundew	40	Behre 1929	C	S. Africa
longifolia	Narrowleaf S.	40	,, ,,	CH	Eur., N.Am.
cistiflora		60	,, ,,	C	S. Africa
spathulata		80	,, ,,	C	Austr., N.Z.
DIONAEA *x*=15, 16					
muscipula	Venus' Fly-trap	30	C. M. Smith 1929	CH	N. America
		32	Behre 1929		

49. SARRACENIACEAE

DARLINGTONIA					
californica	Cal. Pitcher P.	—		CH	Cal. Oregon

HELIAMPHORA					
nutans		—		CH	Br. Guiana
SARRACENIA					
drummondii	Pitcher Plant	—		CH	N. America
flava	,, ,,	—		CH	,, ,,

50. PODOSTEMONACEAE

WEDDELINA $x=20$					
squamulosa		40	Chiarugi, T. 1936	H	N. Brazil
HYDROSTACHYS					
imbricata		—		H	Madagascar

52. ELATINACEAE

BERGIA $x=6$					
ammanoides		24	Hagerup 1932	—	S. Afr., Tr Austr.
suffruticosa (*odorata*)		36	,, ,,	—	Tr. Afr., Pers.
ELATINE $x=?$					
triandra etc.	Water Pepper	*c.* 40	Frisendahl 1927	—	Europe

53. CARYOPHYLLACEAE

SPERGULA $x=9$					
arvensis	Corn Sp.	18	Rohweder 1939	Fo(G)	Europe
rubra		36	L. & L. 1942	—	,,
sativa	Spurrey	—		Fo Ma	Europe
CERASTIUM $x=9$					
tetrandrum etc.		36	Rohweder, T. 1938	—	Europe
arvense	Starry Grasswort	72	,, ,,	H	N. & S. Temp.
caespitosum (*triviale*)		144	,, ,,	H	,, ,,
DRYMARIA (CERASTIUM) $x_2=19$ (9+10)					
cordifolium		38	Rohweder, T. 1938	—	N. & S. Temp.
ARENARIA $x=10$					
serpyllifolia	Sandwort	20, 40	Griesinger, 1937	—	Eur., Temp As., India
STELLARIA $x=10, 11, 12, 13$					
holostea	Easter Bells	26	Peterson 1936	H	Eur., Cauc
bulbosa		33	,, ,,	—	Europe
media	Chickweed	40, 44	,, ,,	(Fo)	,,
palustris		130	,, ,,	—	,,
AGROSTEMMA (LYCHNIS) $x=12$					
githago		24, 48	L. & L. 1942	H	Europe

LYCHNIS (PETROCOPTIS) $x=12$					
chalcedonica	Maltese Cross	24	Blackburn 1928	H	Rus. Sib.
coronaria	Rose Campion	24	„ „	H	S. Europe
flos-cuculi	Ragged Robin	24	„ „	H	Eur., N. As.
flos-jovis		24	„ „	H	S. Europe
haageana (*arkwrightii*)		24	„ „	H	*cult*
lagascae		24	Sugiura, T. 1938	H	Spain
as MELANDRIUM					
album	Evening Campion	24	Blackburn 1928	H	Europe
rubrum (*dioicum*)	Morning C.	24, 48	L. & L. 1942		Eur., N. As.
other species		24	Blackburn 1928		
CUCUBALUS $x=12$					
baccifer		24	Blackburn 1928	—	Eur., N. As.
SILENE $x=12$					
alpestris	Catchfly	24	Blackburn 1928	H	E. Europe
armeria	Sweet William C.	24	„ „	H	S. Europe
compacta		24	„ „	H	E. Europe
maritima		24	„ „	H	Europe
pendula		24	„ „	H	Medit.
schafta	Moss Campion	24	„ „	H	Caucasus
ciliata		24, 48, 192	„ „	H	France
38 other species		24	„ „	—	—
pontica		48	D. Löve 1942	—	Rumania
vallesia		48	„ „	H	Alps
VISCARIA (LYCHNIS) $x=12$					
vulgaris	German Catchfly	24	D. Löve 1942	H	Eur., N. As.
HONCKENYA $x=12$					
peploides		48, 64	Rohweder 1939	—	Trop. Afr.
ALSINE $x=13$					
laricifolia		26	Rohweder 1939	—	Europe
verna		*c.* 120	„ „	—	Eur., N. Amer.
MALACHIUM $x=14$					
aquaticum		28	Petersen 1936	—	Eur., N. As.
SAPONARIA $x=14$					
caespitosa		28	Blackburn 1928 T. 1931	H	Pyrenees
calabrica		28	„ „	H	It., Gr.
cerastoides		28	„ „	—	Caspian
glutinosa		28	„ „	H	Med., Cauc.
lutea		28	„ „	H	Europe
ocymoides		28	„ „	H	S. Europe

SAPONARIA (*cont.*)					
officinalis	Soapwort	28	Blackburn 1928 T. 1931	HM	Eur., W.As.
pulchella		28	,, ,,	—	—
pumilio		28	,, ,,	—	A. Min., Syria
VACCARIA $x=15$					
segetalis		30	Blackburn 1928	H	A.Min., Sib.
TUNICA (DIANTHUS) $x=15$					
olympica		30	Blackburn, T. 1931		As. Minor
saxifraga	Tunic Flower	60	,, ,,	H	Eur., Cauc.
DIANTHUS $x=15$					
alpinus		30	Gentscheff 1937b		N. Temp.
andrzejowskianus		30	Rohweder 1934		—
arboreus		30	Gentscheff 1937b	H	Greece
armeria (*pseudoarmeria*)		30	,, ,,		Eur., Cauc.
atrorubens		30	,, ,,	H	S. Europe
banaticus (*gigantens*)		30	,, ,,	H	Banat
barbatus (*compactus*)	Sweet William	30	,, ,,	H	Europe
capitatus		30	,, ,,	H	S. Russia
carthusianorum	Clusterhead P.	30	,, ,,	H	Eur., A. Min
as *subneglectus*		30	,, ,,		
as *tenuifolius*		30	,, ,,		
as *subfastigiatus*		30	Ishii 1930		
croaticus		30	Gentscheff 1937b	H	Croatia
cruentus		30	,, ,,	H	Greece
cyri		30	,, ,,		A. Min.—Afgh.
deltoides	Maiden Pink	30	,, ,,	H	Eur., W.Tib
as *glaucus*		60	,, ,,		
erythrocopeus		30	Ishii 1930	H	Armenia
frivaldskyanus		30	Gentscheff 1937b		Rumania
gracilis		30	,, ,,		Macedonia
graniticus		30	,, ,,	H	France
heddewigii		30	,, ,,	H	Europe
japonicus	Japanese C.	30	Sugiura 1936a	HP	Jap., Manch
knappii		30	Gentscheff 1937b	H	E. Balkans
libanotis		30	Blackburn, T. 1931		Syria
liburnicus		30	Gentscheff 1937b	H	S. Europe
lusitanicus		30	,, ,,		Sp., Port.
marschallii		30	,, ,,		Crimea
microlepis		30	Rohweder 1934		Greece
moesiacus		30	Gentscheff 1937b		Europe
multipunctatus		30	,, ,,		Gr., Syria
nardiformis		30	,, ,,	H	Turkey
neglectus (*glacialis*)		30	,, ,,	H	Europe
nitidus		30	,, ,,	H	Hung., Maced.
noëanus		30	,, ,,		Rumania
pallens		30	,, ,,	H	Gr., Pers

DIANTHUS (*cont.*)

pallidiflorus		30	Gentscheff 1937b		Cauc., Turkest.
pancicii		30	,, ,,	H	Bulgaria
pelviformis		30	,, ,,	H	Serbia
pinifolius		30	Rohweder 1934	H	Greece
polymorphus (*diutinus*)		30	Gentscheff 1937b	—	Caucasus
pruinosus (*haematocalyx*)		30	,, ,,	—	Greece
puberulus		30	Blackburn, T. 1931	—	Persia
silvestris		30	Gentscheff 1937b	—	Europe
as *tergestinus*		30	,, ,,		
suendermannii		30	,, ,,	—	Greece
trifasciculatus		30	,, ,,	H	S.E. Eur., S.W. Asia
tristis		30	Rohweder 1934	H	Bulgaria
velenowskyi		30	Gentscheff 1937b	H	E. Europe
velutinus		30	Blackburn, T. 1931	H	S. Eur., Cauc.
viscidus (*grisebachii*)		30	Gentscheff 1937b	H	Greece
prolifer		30, 60	Blackburn, T. 1930	—	S. Eur., Cauc.
caryophyllus	Clove Carnation	30, 90	Gentscheff 1937b	HP	Eur., E. Asia
chinensis	Rainbow Pink	30, 60	,, ,,	H	Eur., Temp. Asia
as *sinensis*, *collinus*, *laciniatus*		60, 90	Rohweder 1934, Ishii 1930		
superbus		30, 60	Darlington 1937a	H	Eur., N. As.
as *wimmeri*		60	Ishii 1930		
plumarius	Cottage Pink	30, 90	Rohweder 1930	H	Eur., N. As
as *lumnitzeri*		60	Gentscheff 1937b		
arenarius		60	,, ,,	—	Europe
as *praecox*		90	,, ,,		
attenuatus	Rosetuft Pink	60	,, ,,	H	Sp., Mor.
brachyanthus (*subacaulis*)		60	,, ,,	—	Spain
ciliatus		60	,, ,,	H	It., Egypt
dalmaticus		60	Rohweder 1934	—	Dalmatia
furcatus		60	Gentscheff 1937b	—	It. Alps
haematocalyx		60	Rohweder 1934	—	Greece
hirtus		60	,, ,,	—	France
hispanicus		60	,, ,,	—	Spain
kitaibelii (*petraeus*)		60	Gentscheff 1937b	—	Hungary
latifolius		60	Shibukawa 1930	H	*cult*
leptopetalus		60	Gentscheff 1937b	H	Maced., Cauc.
liliodorus		60	Rohweder 1934	—	Serbia
orbelicus (*cruentus*)		60	,, ,,	H	Greece
petraeus (*spiculifolius*)		60	Gentscheff 1937b	H	Hung., Thrace

DIANTHUS (*cont.*)					
pseudoserotinus		60	Gentscheff 1937b	—	
requieni		60	„ „	H	S. Europe
sternbergii		60	Rohweder 1934	H	Taurus
strictus (*bebius, integer*)		60	Gentscheff 1937b	H	Dalm., Gr
serotinus		60, 90	B. 1930, G. 1937b	H	E. Europe
caesius		60, 90	Gentscheff 1937b	H	Europe
campestris	Field Carnation	60, 90	„ „	H	Caucasus
gallicus		60, 90	„ „	H	Fr., Sp.
acicularis		90	Rohweder 1934	H	C. Asia
alwoodii		90	Shibukawa 1930	H	*cult*
anatolicus		90	Gentscheff 1937b	H	A. Min.—W. Tib.
angulatus		90	„ „		Himalayas
boissierii		90	„ „	H	Spain
caucasicus		90	„ „	H	Europe
crinitus		90	„ „	H	A. Min.—N.W. Ind.
fragrans (*liboschitzianus*)		90	„ „	H	Caucasus
gratianopolitanus (*virgineus*)		90	„ „	H	„
holtzeri		90	„ „	H	Turkestan
hyssopifolius (*superbus*)		90	„ „	H	Eur., N. A
monspessulanus		90	„ „	H	S. Europe
pubescens		90	Ishii 1930	H	Spain
pungens		90	Gentscheff 1937b	H	Greece
racemosus (*ciliatus*)		90	Ishii 1930	—	Italy
seguerii		90	Gentscheff 1937b	H	E. Europe
serrulatus		90	„ „	—	N. Africa
simonkaianus		90	„ „	—	Hungary
squarrosus		90	„ „	H	Rus.-Sib.
tatrae		90	„ „	H	Hungary
tener		90	„ „	H	Italy
versicolor		90	Ishii 1930	H	Altai Mts.
zonatus (*plumarius?*)		90	Gentscheff 1937b	H	Gr., A. Mi
GYPSOPHILA $x=17$					
elegans		?20 (40)	Furusato 1940	H	As. Minor
		34	Blackburn 1928		
viscosa		34	„ T. 1930	H	Syria
arrostii		68	„ „		S. Eur., As. Mino
trichostoma		68	„ „	H	Cauc., Turkest.

54. MOLLUGINACEAE

MOLLUGO $x=8?\ 9$					
cerviana		18	Sugiura 1936a	V	O.W. Su trop.

MOLLUGO (*cont.*)					
oppositifolia		36	Raghavan & S. 1940a	V	O.W. Trop.
racemosa		36	„ „	—	India
pentaphylla		36	„ „	—	Trop. As., Polyn.
nudicaulis		54	„ „	—	Trop. & Subtr.
verticillata		64	Sugiura 1936a	—	Trop. Am. & Africa
GISEKIA *x*=9					
pharnaceoides		36	Raghavan & S. 1940a	—	India

55. FICOIDACEAE (AIZOACEAE)

TRIANTHEMA *x*=8					
pentandra	Horse Purslane	16	Hagerup 1932	(V)	Trop. Asia, Africa
polysperma		16	„ „	—	India, Trop. Afr.
decandra		16	Raghavan & S. 1940a	—	Trop. Asia
monogyna (*portulacastrum*)		26	„ „	V	„ „
cristallina		(28) 32	Hagerup 1932	V	Trop. Asia, Africa
TETRAGONIA *x*=8					
crystallina		32	Sugiura 1940	V	Peru
expansa	N. Zeal. Spinach	32	„ 1936b	HV	Australasia, Japan
echinata		32	„ „	V	S. Africa
implexicoma	Australian S.	—		V	Trop. Aust.
SESUVIUM *x*=8					
portulacastrum	Seaside Purslane	48	Raghavan & S. 1940a	V	Tropics
APTENIA (MESEMBRYANTHEMUM) *x*=9					
cordifolia		18	Wulff 1940b	H	S. Africa
GIBBAEUM (MESEMBRYANTHEMUM) *x*=9					
album		18	Wulff 1940b	H	S. Africa
13 other species		18	„ „	H	„
haagei		36	„ „	H	„
pachypodium		36	„ „	H	„
schwantesii		36	„ „	H	„
shandii		36	„ „	H	„
velutinum		36	„ „	H	„
MESEMBRYANTHEMUM, *s.l.* *x*=9					
crystallinum etc.	Ice plant	18	Sugiura 1936a	HV	S. Africa
emarginatum		18	„ 1931	—	„

MESEMBRYANTHEMUM (*cont.*)

tenuifolium		18	Sugiura 1931	H	S. Africa
violaceum		18	,, 1936a	—	,,
burchellii etc.		36	Propach 1934	—	,,
candens		36	Sugiura 1940	—	,,
vespertinum		36	,, ,,	—	,,
edule	Hottentot Fig	—		F	,,

DELOSPERMA (RUSCHIA) $x=10$

aberdeenensis		20	Propach 1934	H	S. Africa

56. PORTULACACEAE

TALINUM $x=6$

patens		24	Sugiura 1936ab	(V)	Trop. Am.
purpureum		24	,, 1935	—	,, ,,
triangulare	Fame Flower	48	,, 1940	VH	,, ,,
		72	Steiner 1944		

CLAYTONIA $x=6$

asarifolia		24	Blackburn, T. 1936	—	N. As., N.N. Am
perfoliata	Winter P.	36	Rutland 1941	V	N. Americ
tuberosa		—		R	E. Siberia

PORTULACA $x=8, 9$

pilosa		16	Steiner 1944	—	N. & S. Ar
pusilla		18	Sugiura 1936a	—	Venezuela
marginata		36	,, 1937b	—	,,
		18, 54	Hagerup 1932		
oleracea	Purslane	54	Cooper 1935a	V	Trop., Su Trop.
grandiflora		18, (36)	Furusato 1940	H	Brazil
lutea	Yellow P.	—		(V)	Society Is.

CALANDRINIA $x=8, 10, 11, 12.$ $x_2=(11+12)$

grandiflora	Rock P.	16	Sugiura 1936a	H	Chile
		22	Blackburn, T. 1936		
		24	Sugiura 1940a		
umbellata		20	,, 1936a	H	Chile
speciosa (*menziesii*)		24	,, ,,	H	W:N. Am
compressa		24	,, 1937a	H	Chile
procumbens		24	,, 1936a	—	,,
discolor		24	,, 1940	—	,,
caulescens		46	Blackburn, T. 1936	H	Ecuad., Peru
		48	Sugiura 1940		

57. POLYGONACEAE

OXYRIA $x=7$

digyna	Mountain Sorrel	14	Jaretzky 1928b	(V)	Alpine
elatior		14, 42	Edman 1929	—	Arctic

PTEROSTEGIA $x=7$					
drymarioides		28	Sugiura 1936b	—	California
FAGOPYRUM $x=8$					
cymosum	Perennial B.	16	Jaretzky 1928b	G	Him., China
emarginatum		16	,, ,,	G	Eur., N. As.
esculentum	Buckwheat	16	,, 1927	G	*cult*
tataricum	Rye B.	16	,, 1927	G	*cult*
"*rotundatum*"		16 (32)	Sando 1939	—	—
RUMEX $x=7, 8, 9, 10$					
$x=7$					
acetosa	Sorrel Dock				
		♀ : $12+XX$	Ono 1928	V	Eur., N. As.
		♂ : $12+XY_1Y_2$	,, ,,		
		inter : 21, 22, 29	Yamamoto 1934		
montanus	French S.	,,	Ono 1930a	V	Europe
thyrsiflorus		,,	Meurman 1925	—	,,
tenuifolius		28	A. Löve 1941	—	N. Europe
acetosella	Sheep's S.	42	Ono 1930b	—	Eur., N. As.
graminifolius		56	A. Löve 1941	—	Kamchatka
$x=8$					
pallidus (salicifolius)		16	Jensen 1936	—	N. America
$x=9$					
conglomeratus		18	Sugiura 1936a	—	S. Eur., W. Asia
hastatus		18	Ono 1935 T. 1938	—	Himalayas
papilio		18	,, ,,	—	Morocco
nepalensis		54	Sugiura 1936a	—	W. As.—Mal.
$x=10$					
alpinus	Mountain Rhubarb	20	Jaretzky 1928b	MV	Eur., Cauc.
sanguineus	Blood Wort	20	A. Löve 1942	M	Europe
scutatus	Garden S.	20	Jaretzy 1928b	V	Eur., S.W. Asia
		(40)	Fikry 1930		
maritimus		40	A. Löve 1942	—	Trop. & Sub-Trop.
palustris		40	,, ,,	—	Eur., N. As.
crispus	Curly Dock	60	Jensen 1937b	M	,, ,,
patientia	Herb Patience	60	Kihara 1927	MV	S. Eur., S.W. Asia
domesticus		60	A. Löve 1942	V	Europe
longifolius		60, 80	Kihara & O. 1926	V	S. America
hymenosepalus	Canaigre	100	Kihara 1927	D	W:N. Amer.
britannicus		160	Jensen 1936		N. Am. (*sic!*)
aquaticus		200	Löve 1942	MV	Eur., N. As.
hydrolapathum	Wild Rhubarb	200	Kihara & O. 1926	MV	Eur., Am.
EMEX $x=10$					
spinosa		20	Sugiura 1937b	—	Eur., N. Afr.

MUEHLENBECKIA $x=10$					
complexa	Wire Plant	20	Jaretzky 1928b	H	N. Zealand
platyclados	Centipede P.	20	„ „	H	Solomons
sagittifolia		40	„ „	—	S. America
POLYGONUM $x=10, 11, 17$					
$x=10$					
hydropiper	Smartweed	20	Jaretzky 1928b	M	N. & S.
		22	Sokolovskaja & S. '38		Temp.
maritimum		20	Jaretzky 1928b	—	N. Temp.
dumetorum (as *Bilderdykia*)		20	Sugiura 1936a	—	„
convolvulus		20, 40	L. & L. 1942	—	„
minus		40	Wulff 1939	—	Temp.
mite		40	„ „	—	Europe
aviculare	Knot Grass	40, 60	L. & L. 1942	M	N. Temp.
tinctorium	Chinese Indigo	40	Sugiura 1936a	D	China
divaricatum		100	Jaretzky 1928b	—	Siberia
$x=11$					
orientale		22	Jaretzky 1928b	H	Tropics
hastato-auriculatum		22	Sugiura 1936b	—	Japan
maackianum (*thunbergii*)		22	„ „	—	„
nipponicum		22	„ „	—	„
senticosum		22	„ „	—	„
viscosum		22	„ „	—	Himalayas
bioritsuense		44	L. & L. 1942	—	Formosa
flaccidum		44	„ „	—	Ind., Mal.
japonicum		44	„ „	—	Japan
bistorta	Bistort	44	Jaretzky 1928b	HRMV	N. Temp.
		46	S. & S. 1938		
persicaria		44	Jaretzky 1928b	—	„
amphibium	Willow Grass	66	„ „	H	„
cuspidatum		88?	„ „	H	Japan
viviparum	Serpent Grass	83-110	L. & L. 1942	R	Arctic
$x=17$					
sieboldii	Mex. Bamboo	34	Sugiura 1936b	H	Japan
baldschuanicum		—		H	Bokhara
TOVARA (POLYGONUM) $x=11$					
filiformis		44	Sugiura 1936b	Fo	E. Asia
RHEUM $x=11$					
collinianum		22	Edman 1929	—	China
emodi	Redveined R.	22	Jaretzky 1928b	M	Himalayas
officinale	Rhubarb	22	„ „	M	*cult*
palmatum	Chinese R.	22	„ „	HMV	Mongolia
spiciforme		22	„ „	—	Himalayas
crassinervium		44	„ „	—	—
rhaponticum	English R.	44	„ „	MV	S. Sib.,
		44	La Cour unp.		Volga

HEUM (*cont.*)					
ibes	Currant-fruited R.	44	Edman 1929	V	Syr., Afgh.
anguineum (*macropterum*)	Red Rhubarb	44	,, ,,	V	*cult*
ndulatum	Bucharian R.	44	Jaretzky 1928b	—	C. Asia
vebbianum		44	Edman 1929	—	Himalayas
wittrockii		44	,, ,,	—	Turkestan
compactum	Proplant	—		V	C. Asia & China
hybridum		—		V	Mongolia
nobile	Sikkim R.	—		V	Himalayas
TRAPHAXIS $x=11$? [Apomixis]					
billardieri		*c.* 45	Edman T. 1936	—	Gr., Syria
lanceolata (*frutescens*)		*c.* 45	,, ,,	H	Ukr.-Turkes.
spinosa		*c.* 45	,, ,,	—	S.W. Asia
LEUROPTERUS $x=11$					
multiflorus		22	Sugiura 1936b	—	China, Japan
EYNOUTRIA $x=11$					
japonica		44	Sugiura 1936b	—	Japan
RIPLARIS $x=11$					
surinamensis		22	Jaretzky 1928b	H	Trop. Am.
NTIGONON $x=12$					
leptopus	Coral Vine	40	Jaretzky 1928b	H	Mexico
		48	Edman 1929		
		48	Rao 1936a		
COCCOLOBA (-BIS) $x=?$					
uvifera	Sea Grape, Kino	*c.* 80	Edman 1929	FW	S.E.: U.S.A., W. Indies
diversifolia		*c.* 200	Jaretzky 1928b	—	S. Domingo
CALLIGONUM					
polygonoides	Phog	—		G	Afgh., N. Ind.

58. ILLECEBRACEAE.

CORRIGIOLA $x=8$					
litoralis	Sergena Root	16	Sugiura 1937b	M	Europe
		18	Blackburn, T. 1938		
SCLERANTHUS $x=11$					
annuus	Knawel	22	Rohweder 1939	—	Eur., Temp. As.

59. PHYTOLACCACEAE

PHYTOLACCA $x=9$					
sessilifolia		18	Sugiura 1936a	—	Mexico
acinosa	India Pokeberry	36	,, ,,	MV	China, Him.
octandra	Calalu	36	,, 1936b	V	C. America
dioica	Belambra	—		HShFo	S. Amer.
esculenta		—		V	China, Jap.

PETIVERIA $x=9$					
alliacea	Guinea-hen-weed	72	Sugiura 1937b	M	Brazil
RIVINA $x=9$					
tinctoria		54	Sugiura 1940b	—	Peru
humilis	Rouge Plant	108	„ 1936b	H	Trop. Amer.

60. CYNOCRAMBACEAE (THELYGONACEAE)

THELYGONUM $x=11$					
japonicum		22	Sugiura 1937a	—	Japan

61. CHENOPODIACEAE

SPINACIA $x=6$					
oleracea	Spinach	12	Lorz 1937	V	*cult*, Afgh.
		12 (24)	Furusato 1940		
tetrandra	Schamum	12	Lorz 1937	V	Caucasus
ATRIPLEX $x=9$					
hastata	Mountain O.	18	Winge 1917		Europe
hortensis	Orache	18	La Cour 1931	V	Cosmop.
littoralis	Salt Bush	18	Wulff 1937a		N. Temp.
semibaccatum		18	Kjellmark 1934	Fo	Australia
HALIMIONE (OBIONE) $x=9$					
pedunculata		18, 36	Wulff 1936	—	Eur., N. & S.W. Asia
portulacoides		36	„ „	—	Eur., Syr., N. Africa
SALICORNIA $x=9$					
perennis		18	M. 1939	—	Europe
annua		36	„	—	„
herbacea (*europaea*)	Glass Wort	$36+2f$	Maude 1940	V	Eur., As., N. Amer.
BETA $x=9$					
macrocarpa		18	Wulff 1936	V	Pers., Cauc.
macrorhiza		18	Sirotina 1936	V	Eur., N. Afr., S.W. Asia
maritima	Sea Beet	18	Kachidze 1935	V	Eur., N. Afr.
patula		18	Wulff 1936	—	Madeira
patellaris		18	Bleier 1930	V	Teneriffe
lomatagona		18	Sirotina 1936	—	A. Min., Syr.
		36	Müntzing 1937c		
vulgaris	Beet, Mangold	18	Winge 1917	RSu	*cult*
		18 (19, 20, 27, 36, 42, 45)	Levan 1942b		
v. *cicla*	Spinach Beet	18 (36)	Thomas unp.	V	*cult*
corolliflora		36	Zossimovich 1939	V	Pers., A.M.
lom. × *corolliflora*		27, 54	Zaikovskaja 1939	—	*expt.*
trigyna		54	Bleier 1928	R	Balk., A.M.

USSINGAULTIA $x=9$					
aselloides		36	MacKenzie, T. 1936—		Ecuador
HENOPODIUM $x=9$					
irgatum		18	Wulff 1936	V	Japan
lbum	Goosefoot,	18	Winge 1917,	(G)V	N. Temp.
	Pigweed	36	Cooper 1935b		
		54	Kjellmark 1934		
mbrosioides	Wormseed, Mexican Tea	36	” ”	BVI	Trop. Amer.
onus-henricus	Good-King-Henry	36	Winge 1917	V	Europe
uinoa	Quinoa	36	Kjellmark 1934	G	Peru, *cult*
uricomum	Austr. Spinach	—		V	Australia
LSOLA $x=9$					
ali	Russian Thistle	36	Wulff 1937a	M	N.& S.Tem.
da	Barilla Plant	36	” 1936	M	” ”
agus		36	” ”		” ”
SSIA (CHENOLEA) $x=9$					
irsuta etc.		18	Wulff 1936	—	Italy
BLITZIA $x=9$					
mnoides		18	Wulff 1936	—	Caucasus
UAEDA $x=9$					
uticosa		36	Joshi 1935	M	N. Tem.
aritima	Sea Blite	36	Wulff 1937a	V	N.& S. Tem.
nearis		54	Lorz 1937	—	N. America, Cuba
UROTIA $x=9$					
ratoides		36	Wulff 1936	H	Eur., N. America
OCHIA $x=9$					
renaria		18	Wulff 1936	—	S. Eur., W. Asia
oparia	Summer Cypress	18	” ”	H	Eur., N. Asia
ONOLEPIS $x=9$					
henopodiodes		18	Wulff 1936	—	Siberia
ifida		18	” ”	—	”
AISTON $x = 9$					
onondrum		36	Wulff 1936	—	N. Asia
ALOGETON					
tivus		—		M	Spain
ALOXYLON					
nmodendron	Saesaoul	—		DW	W. & C. As.

63. AMARANTHACEAE

DIGERA $x=6$					
arvensis		12	Puri & Singh 1935	V	Trop. Afr. & Asia
ACHYRANTHES $x=7$					
bidentata		42	Sugiura 1936b	(G)M	Trop. Asia
AMARANTHUS $x=8, 17$					
caudatus	Love-lies-bleeding	32	Takagi 1933	GHVM	Tropics
paniculatus	Anardana	32	,, ,,	GV	India
mangostanus		32	,, ,,	V	India
blitum	Wild Amaranth	34	,, ,,	V	Temp. & Trop.
gangeticus as *tricolor*	Lal sag	34	,, ,,	HV	Tropics
spinosus	Spiny A.	34	,, ,,	V	Tropics
frumentaceus	Kiery	—		G	India
oleraceus		—		V	Egypt, India
polygamus	Goosefoot	—		V	Tr. Afr., Ind
retroflexus		—		V	N. America
tenuifolius		—		V	Tr. Afr., Ind.
viridis	Green Calalu	—		V	Temp. & Trop.
hybrida	Red Cockscomb	—		HM	*cult*
CELOSIA $x=9$					
cristata	Cockscomb	36	Wakakuwa 1931	HV	Tropics
argentea	Quail Grass	72	,, ,,	V	,,
trigyna		—		VM	Trop Afr.
laxa		—		V	Tropics

64. BASELLACEAE

ULLUCUS $x=?$					
tuberosus	Ulluco	36	MacKenzie, T. 1936	R	Andes
BASELLA $x=?$					
alba	Malabar Nightshade	48	MacKenzie, T. 1936	V	Tropics
rubra	Indian Spinach	44	Sugiura 1936a		Tropics
		60	MacKenzie, T. '36	V	

65. LINACEAE

LINUM $x=8, 9, 10, 12, 15$					
$x=8$					
catharticum		16	Vilmorin & S. 1927b	M	Eur., S.W. Asia
hirsutum		16	,, ,,	—	Gr., A. Min.
grandiflorum	Flowering F.	16	Ray 1944	H	Algeria
viscosum		16	,, ,,	H	S. Europe

LINUM (*cont.*)					
x=9					
altaicum		18	Kikuchi 1929	—	Siberia
extraaxillare		18	„ „	—	Banat
hologynum		18	„ „	H	„
lewisii	Prairie Flax	18	„ „	—	N. Temp.
muelleri		18	„ „	—	Sardinia
narbonense	Narbonne F.	18	„ „	H	S. Europe
perenne etc.	Perennial F.	18	Ray 1944	H	N. Temp.
punctatum		18	Martzenitzina 1927	—	Sicily
austriacum	Austrian F.	18, 27	Freiburg 1933	H	Eur.—Pers.
alpinum		18	Ray 1944	—	Eur., N. Afr.
		36	Kikuchi 1926	H	„ „
x=10					
gallicum		20	Ray 1944	H	C.Eur.,Med.
maritimum		20	Vilmorin & S. 1927b	—	Medit.
x=14					
arboreum		28	Ray 1944	H	E. Med.
companulatum		28	„ „	H	S. Europe
capitatum		28	„ „	H	„ „
x=15, 16					
corymbiferum		30	Kikuchi 1926	—	N. Africa
nervosum		30	Vilmorin & S. 1927b	—	S. Eur., S.W. Asia
rigidum		30	Dillman 1933	—	W.N. Amer.
sulcatum		30	„ „	—	N. America
angustifolium etc.		30	Ray 1944	—	Eur., N.Afr.
africanum		32	Sugiura 1940	—	N. Africa
flavum	Golden Flax	30	Kikuchi 1929	H	S. Europe
		30-32	Martzenitzina 1927		Caucasus
usitatissimum	Flax, Linseed	30	Kappert 1933	MOT	S.W. Asia, *cult*
		32	Emme & S. 1927		
		(60)	Simonet 1938		
as *crepitans*		30, 32	Emme & S. 1927		
monogynum		86?	Kikuchi 1929	H	N. Zealand

66. ZYGOPHYLLACEAE

ZYGOPHYLLUM *x*=11					
fabago	Bean Caper	22	Warburg 1938	Sp	Sp., N. Afr., W. Asia
coccineum		—		Sp.	N. Afr., Arabia
simplex		—		M	N. Afr., W. Asia
PEGANUM *x*=12					
harmala	Turkey-red	24	Warburg 1938	D	C. Asia, Medit.

TRIBULUS $x=12$					
terrestris	Land Caltrops	24	Sugiura 1940	M(V)	Tropics
maximus	Soap-brush	—		M	America
GUAIACUM $x=?$					
officinale	Lignum vitae	*c.* 26	E.K.J.	ReMW	W. Indies, C. Amer.
sanctum	Lignum vitae	—		MW	„ „
LARREA					
mexicana	Creosote Plant	—		D	Mexico

67. GERANIACEAE

PELARGONIUM $x=8, 9, 10, 11$					
$x=8$					
infundibulum?		16	Gauger 1937	—	—
odoratissimum	Ger. Oil Plant	16	Takagi 1928	HP	Trop. Afr.
$x=9$					
acetosum	Storksbill	18	Gauger 1937	(V)	S. Africa
hortorum		18	Takagi 1928	H	*cult*
inquinans		18	„ „	H	S. Africa
lateripes		18	Gauger, 1937	H	„
monstrum		18	„ „	—	„
scandens		18	„ „	—	„
zonale		18, 36	Kostoff & K. 1933	H(V)	*cult*
endlicherianum		36	Warburg 1938	—	S. Africa
peltatum	Ivy-leaved G.	36	Takagi 1928	H(V)	„
domesticum	Show G.	17, 18, 35, 36, 45	Gauger 1937	H	*cult*
tomentosum		45	Takagi 1928	—	S. Africa
quercifolium		45	„ „		„
		44, 88?	Schtschavinskaja 1937b		
roseum	Rose G.	72 (144)	„ „	HP	„
radula		81	Takagi 1928	H	„
denticulatum		90	„ „	H	„
graveolens		90	„ „	HP	„
glutinosum		90	„ „	—	„
$x=10, 11$					
roessingense		20	Schtschavinskaja 1937b		S. Africa
violaceum		20	„ „		„
ardens		22	„ „		„
carnosum		22	„ „		„
cotyledonis		22	„ „		St. Helena
dasycaulon		22	„ „		S. Africa
gibbosum		22	„ „		„
amabile		40, 44	„ „		„
flavum		40, 44	„ „		„

PELARGONIUM (*cont.*)					
triste		60	Gauger 1937	(R)	S. Africa
decipiens		88	,, ,,		,,
vitifolium		88	,, ,,	H	,,
capitatum				P	,,
ERODIUM	$x=9, 10$				
amanum		18	Gauger 1937	H	Syria
ciconium		18	,, ,,	H	Medit.
chamaedryoides		20	,, ,,	H	Corsica
cheilanthifolium		20	,, ,,	H	Spain, Mor.
		40	Warburg 1938		
macradenum		20	,, ,,	H	Pyrenees
moschatum	Musk Clover	20	Gauger 1937	FoHP	Medit., S.W. Asia
supracanum		20	,, ,,	H	Pyrenees
sibthorpianum		27	,, ,,		Maced., As. Min.
manescavi		40	Warburg 1938		Pyrenees
cicutarium	Pin Grass	20, 40	,, ,,	FoH(V)	Medit., C. Asia
chrysanthum		*c.* 32, 36	,, ,,	H	Greece
GERANIUM	$x=9, 10, 11, 12, 13, 14.$ $x_2=23, 25$				
columbinum		18	Gauger 1937	—	Eur., N. As.
lucidum		20	Warburg 1938	H	,, ,,
dissectum	Australian G. Native Carrot	22	,, ,,	HR	S. Eur.
pratense		24	Tjebbes 1928	H	Eur., N. As.
		28	Gauger 1937		
sylvaticum	Wood Cranesbill	24	Tjebbes 1928	DH	Eur., N. As.
		28	Gauger 1937		
endressii		26	,, ,,	H	Pyrenees
molle		26	,, ,,	H	Eur., N. As., S.W. Asia
pyrenaicum		26	,, ,,	H	Eur., A.Min.
		28	Warburg 1938		
pusillum		26	Gauger 1937	H	Eur., Cauc., Him.
argenteum	Silver-leaf C.	28	,, ,,	H	Europe
cristatum		28	,, ,,	—	Albania
cinereum		28	,, ,,	—	Pyrenees
palustre		28, 56	,, ,,	—	Eur., N. As.
platypetalum (*eriostemon*)		28, 42	Warburg 1938	H	Caucasus
favosum		50	,, ,,	—	—
ibericum		56	Gauger 1937	H	Caucasus
robertianum	Herb Robert	32	Warburg 1938	M	N. Temp.
		56	Gauger 1937		
sanguineum		84	,, ,,	H	Eur., Cauc.
macrorhizum		46	Warburg 1938	H	S. Europe
		c. 92	Gauger 1937		
anemonifolium		68	Warburg 1938	H	Canary Is.

MONSONIA $x=12$					
senegalensis		24	Warburg 1938	—	Trop. Afr.

68. LIMNANTHACEAE

LIMNANTHES $x=5$					
alba		10	Sugiura 1937b	H	Calif.
douglasii	Meadow Foam	10	,, 1936a	H	W.N. Amer.

69. OXALIDACEAE

OXALIS $x=5, 6, 7, 9, 11$					
bupleurifolia	Brazil Bush O.	10	Heitz 1927		Brazil
caprina		20	,, ,,		S. Africa
hirta		30	Yamashita 1935		,,
pentaphylla		30	,, ,,		,,
versicolor		30	,, ,,		,,
rhombifolia		80	Heitz 1927		Venezuela
corniculata	Creeping S.	24	Rutland 1941	HV	Temp. & Trop.
stricta	Yellow O.	24	Wulff 1934		,, ,,
articulata		14	Heitz 1927		Argentina
crenata	Arracacha	14	,, ,,	R	Peru
deppei	Rosetta O.	14	,, ,,	RV	S. America
brasiliensis		14	,, ,,		Brazil
		28	Yamashita 1935		
adenophylla		28	Heitz 1927		Chile
lasiandra		28	,, ,,		Mexico
		28	,, ,,		N. America
violacea	Violet W. S.	28	Yamashita 1935	H(V)	,,
cernua	Bermuda Buttercup	35	,, ,,	HV	S. Africa
japonica		35	M. & S. 1935		Japan
truncatula		42	Heitz 1927		S. Africa
tuberosus	Oka	63-70	Kostoff *et al.* 1935	R	Andes
valdiviensis		18	Warburg 1938	—	—
acetosella	Wood Sorrel	22	Nakajima 1936	MV	N. Temp.
AVERRHOA					
bilimbi	Bilimbi	—		FV(W)	Ind., China
carambola	Carambola	—		F	,, ,,

70. TROPAEOLACEAE

TROPAEOLUM $x=6, 7$					
peregrinum	Canary Flower	24	Warburg 1938	H	Peru
as *canariense*		28	Heitz 1926		
majus	Nasturtium	28	Sugiura 1925	H(V)	Peru, Brazi
minus	Dwarf N.	28	Heitz 1926	H(V)	Peru
peltophorum		28	Sugiura 1931	H	,,
tuberosum	Per. N., Ysano	42	,, 1936a, b	HR	,,
edule		—		(R)	Chile

71. BALSAMINACEAE

IMPATIENS $x=7, 8, 9, 10$					
$x=7$					
amphorata		14	Warburg 1938	—	Himalayas
balfourii		14	Wulff, T. 1936	—	„
balsamina	Garden Balsam	14	F. H. Smith 1934	H	Trop. Asia
as *rosea*		14	Wulff T. 1936		—
capensis		14	„ „	H	S. Africa
firmula		14	Heitz & R. 1936	H	Madag.
scabrida		14	F. H. Smith 1934	—	Himalayas
as *tricornis*		14	Heitz & R. 1936		—
$x=8$					
holstii		16	Sugiura 1936a	H	Tr. Afr., S.W. Asia
oliveri		16	Wulff 1933	H	„ „
petersiana		16	„ „	—	„ „
sultani		16	„ „	H	„ „
$x=9$, 10 etc.					
roylei		18	F. H. Smith 1934	H	Himalayas
		20	Warburg 1938		
biflora	Jewel Weed	20	F. H. Smith 1934	—	N. America
noli-tangere		20	Winge 1925	H	Eur., Sib.
pallida		20	F. H. Smith 1934	—	N. America
parviflora		20	Schürhoff 1926	—	Turkest., Sib.
		24	Wulff 1934		
		26	Heitz & R. 1936		
HYDROCERA $x=8$					
triflora (*angustifolia*)		16	Schürhoff 1931	D	Mal., India

72. LYTHRACEAE

PEPLIS $x=5$					
portula	Water Purslane	10	Hagerup 1941	V	Eur., W. As.
LYTHRUM $x=15$					
hyssopifolia		20?	Tischler 1929a	H	Temp.
" *delcana* "		30	La Cour unp.		—
virgatum		30	„ „	H	Eur., N. As.
salicaria	Purple Loosestrife	30	Shinke 1929	H	N. Temp.
		60	La Cour unp.	—	N. America
myrtifolium		60	„ „		—
NESAEA (LYTHRUM, DECODON) $x=15$					
triflorum		60	La Cour unp.	H	S. America
CUPHEA $x=6$					
cyanea		12	Sugiura 1937b		Mexico
lanceolata		12	„ „		„
miniata	Cigar Flower	18	„ 1936b	H	„
platicentra		36	„ „		„

LAGERSTROEMIA					
flos-reginae	Murata	—		HW	India
indica	Grape Myrtle	—		H	S. Asia, N. Austr.
LAWSONIA					
inermis	Henna	—		DH	Old Worl Dry Trop
PHYSOCALYMMA					
scaberrimum	Tulip Wood	—		W	Brazil
WOODFORDIA					
floribunda	Malitta	—		D	As. & Afr., Tropical

75. PUNICACEAE

PUNICA $x=8, 9?$					
granatum	Pomegranate	16	Yasui 1936b	DHFM	*cult*, Persia
		18, 19	Kostoff *et al.* 1935		
		18	Proos 1938		
protopunica		—		—	Socotra

77. ONAGRACEAE (OENOTHERACEAE)

ANOGRA $x=7$					
pallida		14	Johansen 1931d	HW	N. Americ
trichocalyx		14	„ 1929c	H	„
OENOTHERA $x=7$					
lamarckiana	Evening Primrose	14 (21, 28)	Darlington 1931b	H	Europe
biennis (& 24 spp.)	„ „	14	„ „	—	N. Americ
organensis	„ „	14	Emerson 1938	—	„ „
rosea	„ „	14	Schwemmle 1924	H	„ „
glauca	„ „	28	„ „	H	„ „
pumila	„ „	28	Valcanover 1927	H	„ „
GAURA $x=7$					
coccinea		14	Johansen 1929c	H	S. Dak.-Mex.
lindheimeri		14	Sugiura 1936a, b	H	Texas
TARAXIA (OENOTHERA) $x=7$					
heteranthera		14	Johansen 1929c	H	W:U.S.A.
ovata	Golden Eggs	14	„ 1931a	H	California
GODETIA $x=7, 9$ etc.					
amoena		14	Chittenden 1928	H	W:N. Am
quadrivulnera		14	Johansen 1929c		N. Americ
whitneyi (grandiflora)		14 (21, 28)	Håkansson 1940	H	California
bottae		18	Chittenden 1928	H	S. Calif.
deflexa		*c.* 18	Johansen 1929c	—	N. Americ
tenella		32	Chittenden 1928	—	Chile
lepida		42	Håkansson 1925	—	California
		52	Chittenden 1928		

EUCHARIDIUM (CLARKIA) $x=7$					
concinnum		14	Johansen 1929c	H	California
CLARKIA $x=7$					
elegans		14	Johansen 1930	H	N. America
		18	Geitler 1937b		
pulchella		24	Håkansson 1931b	—	,, ,,
JUSSIEUA $x=8$					
repens	Primrose Willow	16	Sinoto 1928b	DM	Tropics
CIRCAEA $x=11$					
lutetiana etc.	Enchanter's Nightshade	22	Uddling 1929	—	Europe
GAYOPHYTUM $x=11$					
ramosissimum		22	Johansen 1933a	—	W. N. Amer.
LOPEZIA $x=11$					
coronata		22	Täckholm 1914	H	Mexico
FUCHSIA $x=11$					
boliviana		22	Warth 1925	—	Bolivia
colensoi		22	,, ,,	—	New Zeal.
corymbiflora		22	,, ,,	—	Peru
fulgens		22	,, ,,	—	Mexico
magellanica (*macrostemma*)		22, 44	Johansen 1929c	H	Peru, Chile
procumbens		22	,, ,,	H	New Zeal.
serratifolia		22	Warth 1925	—	Peru
splendens		22	,, ,,	H	Mexico
triphylla		33	,, ,,	H	,,
coccinea (*magellanica?*)		44	,, ,,	H	Brazil
lycioides (*rosea*)		44	,, ,,	H	Chile
ZAUSCHNERIA $x=15$					
latifolia		*c.* 30, 60	J. Clausen *et al.*	—	California
microphylla		30, 60	,, ,,	—	,,
californica	Cal. Fuchsia	*c.* 60	,, ,,	H	,,
EPILOBIUM $x=18$					
luteum etc.	Willow Herb	36	L. & L. 1942	H	Nor. Region
hirsutum		36	,, ,,	H	Europe
20 species		36	Hair 1942	—	New Zeal.
TRAPA $x=?$					
bispinosa	Singhara Nut	—		NV	O.W. Trop.
natans	Water Chestnut	*c.* 36	Palmgren 1943	N	Eur., Asia

78. HALORRHAGACEAE

GUNNERA $x=?$					
chilensis		*c.* 24	Winge 1917	H	Andes

MYRIOPHYLLUM					
proserpinacoides	Water Feather	—		H	Chile, Urug
verticillatum	Water Milfoil	—		H	N. Amer., Eur., Asi

79. CALLITRICHACEAE

CALLITRICHE $x=3, 5$					
autumnalis		6	Jørgensen 1923	—	Eur., N. Amer
truncata		6	Dodds, T. 1936	—	Italy
polymorpha		12	L. & L. 1942a	—	S. Sweden
stagnalis		10	Sokolovskaja 1932	—	Eur., Indi
verna		20	,, ,,	—	Eur., N. Amer.

81. THYMELAEACEAE

DAPHNE $x=9$, etc.					
alpina	Alpine D.	18	Strasburger 1909	H	Him., Med
kiusiana		18	Osawa 1913	H	Japan
mezereum	February D.	18	Maude 1940	HM	Eur., N. As
yezoensis		18	M. & S. 1935	—	Japan
glomerata		18	S. & S. 1940	H	Cauc.
odora	Winter D.	28	Takenaka 1931	HP	Japan
		30	Yamaha, K. 1931		
cannabina	Nepal Paper Pl.	—		T	India
EDGEWORTHIA $x=9$					
papyrifera	Paper Bush	36	Sugiura 1936a	HT	China, Jap Him.
WIKSTROEMIA $x=9$ (Polyploids Apomictic)					
canescens	Paper Bark Tree	18	Strasburger 1910	T	Him., Chin Ceylon
viridiflora (*indica*)	Philippine P.B.T.	27	Fagerlind 1940	T	S.E. Asia
		52?	Winkler 1906		
LEGATTA					
lintearia	Lace Bark	—		T	Jamaica
AQUILARIA					
agallocha	Ligu-Aloes	—		PReW	Himal, Burma

83. NYCTAGINACEAE

BOUGAINVILLEA $x=10$					
glabra		20	D.C. Cooper 1931	H	Brazil
spectabilis		—		H	,,
MIRABILIS $x=29$					
jalapa		58	Showalter 1935	HM	Trop. Ame
longiflora		58	,, ,,	H	—
multiflora		58	,, ,,	H	Mexico

BOERHAAVIA					
diffusa	Hogweed	—		(V)	Tropics
repens	„	—		(V)	„
NEEA					
theifera		—		BD	Brazil
PISONIA					
alba	Tree Lettuce	—		V	India, Mal.

84. PROTEACEAE

GREVILLEA *x*=8, 10					
macrostachya		16	Messeri 1928	Sh	Australia
robusta	Silky Oak	20	Sugiura 1936a	HSh	„
PROTEA *x*=12					
neriifolia		24	Nel, T. 1936	H	S. Africa
BANKSIA					
coccinea		—		H	Australia
FAUREA					
macnaughtoni	Terblanz Wood	—		W	Trop. & S. Africa
LEUCADENDRON					
argenteum	Silver Tree	—		Sh	S. Africa
MACADAMIA					
ternifolia	Queensland Nut	—		HN	Queensland

85. DILLENIACEAE

HIBBERTIA *x*=9					
volubilis (*dentata*)		18	E.K.J.	H	Australia
WORMIA *x*=13					
suffruticosa	Marsh S.	26	Paetow 1931	H	Malaya
pulchella	Simpoh	—		W	„
DILLENIA					
aurea		—		MW	Himalayas
indica	Chalta	—		Fo_1FHW	Trop. Asia
pentagyna		—		FSp	India
scabrella	Sand Paper Tree	—		SpV	Himalayas

87. CORIARIACEAE

CORIARIA *x*=?					
myrtifolia		*c.* 80	Bowden 1940a	H	S. Eur., N.W. Afr.

88. PITTOSPORACEAE

PITTOSPORUM $x=12$					
tobira	Japanese P	24	Schürhoff 1929a	H	Jap., China
crassifolium	Karo	—		HW	New Zeal.
floribundum	Yekadi			H	Sub-Him.
SOLLYA					
heterophylla	Bluebell Creeper	—		H	Australia

91. BIXACEAE

BIXA $x=7$					
orellana	Annatto	14	E.K.J.	D	S America

92. COCHLOSPERMACEAE

COCHLOSPERMUM					
tinctorium	Fayer	—		DT	Trop. Africa
gossypium	Yellow Silk—Cotton T	—		DOReT	Ind., Burma

93. FLACOURTIACEAE

HYDNOCARPUS $x=11, 12$					
ilicifolius		22	E.K.J.	MW	Mal., Camb. Java
anthelmitica	Chinese Chaulmoogra	24	„	MW	Indo-Ch.
alpinus	Maravatti	—		MW	S. Ind., Ceylon
castaneus		—		MW	Burma, Borneo
venenatus		—		MW	Ind., Ceylon
wightianus	Indian Ch.	—		MW	India
woodii	Karkos	—		MW	N. Borneo
ABERIA					
caffra	Kei Apple	—		F	S. Africa
gardneri	Ceylon Gooseberry	—		F	Ind., Ceylon
FLACOURTIA					
ramontchi	Uguressa	—		F	Ind., Mal.
jangomas		—		F	„
inermis	Lovi lovi	—		FW	N. Ind., Mal.
indica	Batoko Plum	—		F	Ind., Trop. Afr.
rukam	Mauritius Prune	—		F	Ind., S.W. Asia
vogeli	Berry Tree	—		F	W. Tr. Afr.

TARAKTOGENOS					
kurzii	Chaulmoogra	—		M	Burma, Siam
PANGIUM					
edule	Payang	—		MO	E. Indies

95. CANELLACEAE

CANELLA					
winterana (*alba*)	White Cinnamon	—		M	Flor., W. Indies
CINNAMODENDRON					
corticosum	Red Canella	—		M	Japan

96. CISTACEAE

HELIANTHEMUM *x*=8, 10, 11					
ledifolium		16	Chiarugi 1925	H	S. Europe
alpestre		20	Bowden 1940a	H	„
canadense		20	„ „		N.E.U.S.A.
glaucum		20	„ „	H	Medit.
guttatum		20	„ „	H	„
		48	Chiarugi 1925		
ovatum		20	Bowden 1940a		Europe
pilosum		20	„ „	H	S. Europe
polifolium (*pulverulentum*)		20	„ „	H	Medit.
as *appeninum*		32	Chiarugi 1925		
roseum		20	Bowden 1940a	H	Europe
canum		22	„ „	H	Eur., A. Min.
vulgare	Rock Rose	32	Chiarugi 1925	H	Europe
arabicum		32	„ „	—	Arabia
HALIMIUM *x*=9					
atriplicifolium		18	Chiarugi 1925	—	Spain
CISTUS *x*=9					
albidus	Rock Rose	18	La Cour unp.	H	Medit.
corbariensis (*salvifolius*)		18	„ „		„
hirsutus		18	„ „	—	Sp., Port.
ladaniferus	Ladanum Pl.	18	Chiarugi 1937	HMP	S.W. Europe
laurifolius		18	La Cour unp.	H	Medit.
monspeliensis		18	„ „	H	S. Europe
parviflorus		18	„ „		Medit.
populifolius		18	Chiarugi 1937	M	W. Medit.
rosmarinifolius		18	La Cour unp.		Medit.
salvifolius		18	„ „	H	„
symphitifolius		18	Chiarugi 1937	M	Teneriffe
villosus	Cretan R.R.	18	„ 1925	—	Spain
virgatus		18	La Cour unp.	H	Mexico

97. FRANKENIACEAE

FRANKENIA $x=10$					
pulverulenta		20	Sugiura 1937b	H	Med., India

98. TAMARICACEAE

TAMARIX $x=12$					
ericoides		24	Sharma 1939	T	India
gallica	Tamarisk	24	Bowden 1940a	HSbT	Eur., Him.
hispida		24	,, ,,	HT	Caspian
odessana		24	,, ,,	T	,,
porrifolia		24	,, ,,	T	S. Europe
pentandra		24	,, ,,	HT	Eur., Asia
articulata (*aphylla*)	Thaia	—		SuTW	Sahara
senegalensis	Tarfa	—		T	W. Africa
MYRICARIA $x=12$					
germanica	False Tamarisk	24	Frisendahl 1912	H	N. Temp.

99. FOUQUIERACEAE

FOUQUIERA $x=8$					
burragei		16	Johansen 1936	—	N. America
peninsularis		16	,, ,,	—	California
splendens	Ocotillo	16	,, ,,	HO	S.W.: U.S.A.

101. PASSIFLORACEAE

PASSIFLORA $x=9$					
coerulea	Blue Crown P. Fl.	18	Nakajima 1931	FH	Brazil
edulis	Passion Fruit	18	E.K.J.	F	,,
foetida	Wild P. Fr.	18	,,	FM	W. Afr., Ind.
incarnata	May Pop	18	Heitz 1926	FH	Trop. Am.
quadrangularis	Giant Granadilla	18	E.K.J.	F	,, ,,
racemosa (*princeps coccinea*)		18	Heitz 1926	FH	Guiana
lutea	Yellow P. Fl.	84?	Bowden 1940b	FH	West Indies
lancifolia	Water Lemon	—		F	Trop. Amer.
laurifolia	Water Lemon	—		F	,,
ligularis	Sweet Granadilla	—		F	Brazil
macrocarpa		—			,,
maliformis	Sweet Calabash	—		F	W. Indies
nitida	Bell Apple	—		F	Guiana

103. CUCURBITACEAE

CUCUMIS $x=7, 12$					
sativus	Cucumber	14 (28)	Heimlich 1927 Shifriss 1942	(M)V	*cult*, India
trigonus	Jackal's C.	14	E.K.J.	M	India, Turkest.

CUCUMIS (*cont*).					
agrestis	Wild Melon	24	Araratian 1939	F	Armenia
chinensis		24	,, ,,	F	China
microcarpus		24	,, ,,	—	Armenia
anguria	W. I. Gherkin	24	Kozhuchow 1930	V	Trop. Am.
dipsaceus	Teasel Gourd	24	,, ,,	V	Trop. Afr., Ar.
flexuosus	Snake C.	24	,, ,,	V	Tropics
lyratus		24	,, ,,	V	Tanganyika
melo	Melon	24	Yamaha & S. 1936	NVF	*cult*, Afgh.
	Cantaloupe	(48)	Shifriss 1941		
metuliferus	Horned C.	24	Kozhuchow 1930	V	S. Africa
myriocarpus	Gooseberry G.	24	,, ,,	V	,,
odoratissimus		24	,, ,,	F	Tropics
prophetarum	Globe Cucumber	24	,, ,,	V	Ar., Tr. Af.
sacleuxi		24	,, ,,	V	Zanzibar
CYCLANTHERA $x=8$					
explodens		32	Resende 1937	—	Ecuador
pedata		32	,, ,,	—	Mexico
ECHINOCYSTIS (MICRAMPELIS) $x=8$					
fabacea		32	McKay 1931	V	California
macrocarpa		32	,, ,,	—	,,
oregona		32	,, ,,	—	W.N. Am.
THLADIANTHA $x=9$					
dubia		18	Kozhuchow 1934	V	China
BRYONIA $x=10$					
alba	White Bryony	20	Kozhuchow 1934	M	W. Medit.
dioica	Red Bryony	20	,, ,,	M	Eur., Medit.
CITRULLUS $x=11$					
colocynthis	Colocynth	22	Whitaker 1933b	M	Africa
vulgaris	Water Melon	22	Kozhuchow 1925	FN	Trop. Africa
LAGENARIA $x=11$					
vulgaris	Bottle Gourd	22	McKay 1931	V	*cult*, Afgh.
	or Calabash	(44)	Sinnott *et al.* 1939		
MOMORDICA $x=11$					
balsamina	Balsam Apple	22	McKay 1931	MV	Tropics
charantia	Bitter Gourd	22	Yamaha & S. 1936	VVit	Tropics
cochinchinensis		—		V	O.W. Trop.
foetida		—			Ind., S.W. Asia
TRICHOSANTHES $x=11$					
anguina	Snake Gourd	22	McKay 1931	V	Trop. Asia
japonica		22	Sinoto 1929	V	,, ,,
cucumeroides		44	Yamaha & S. 1936	V	Japan
dioica	Patol	—		V	India

MELOTHRIA $x=11, 12$					
japonica		22	Nakajima 1931	V	Japan
punctata (*abyssinica*)		24	McKay 1931	V	S. Africa
scabra		24	Kozhuchow 1934	V	Mexico
CUCURBITA $x=10, 12$					
maxima	Winter or Turban Squash	24	Rau 1929	OV	Peru *cult*
		40	Passamore 1930		
		40	Ruttle 1931b		
		44-48	Kozhuchow 1925		
moschata	Pumpkin, Cushaw, or Toonai	24	Yamaha & S. 1936	V	Mexico *cult*
		40	Ruttle 1931b		
		40	Nakajima 1936		
		48	Kozhuchow 1925		
		48	Castetter 1930		
pepo	Summer Squash or Vegetable Marrow	40	Erwin & H. 1930	OMV	S.W. Asia *cult*
		40	Castetter 1930		
		(80)	E.K.J.		
v. *pomiformis*		40	Kozhuchow 1925		
v. *citrullina*		42	,, ,,		
digitata		40	McKay 1931	V	N. Mex.
ficifolia	Malabar Gourd	40	,, ,,	V	E. Asia
foetidissima	Calabazilla	40	,, ,,	V	Mexico
palmata		40	,, ,,	V	Calif.
IBERVILLEA (MAXIMOWICZIA) $x=11, 12$					
lindheimeri		22	MacKay 1930	—	Texas
sp.		24	,, ,,	—	—
ECBALLIUM $x=12$					
elaterium	Squirting C.	24	Mackay 1930	H	Medit.
SECHIUM $x=12$					
edule	Chayote, Chocho	24	Sugiura 1940	HVT	W. Indies
BENINCASA $x=12$					
hispida (*cerifera*)	Wax or White Gourd	24	Resende 1937	MV	Trop. Asia
		24	Whitaker 1933		
SICYOS $x=12$					
angulatus	Bur Cucumber	24	Kozhuchow 1934	HV	E.U.S.A.
COCCINIA (CEPHALANDRA) $x=12, 13$					
hirtella		24	McKay 1930	V	S. Africa
indica (*cordifolia*)	Ivy Gourd	26	Kumar & D. 1940	FV	Trop. Asia
LUFFA $x=13$					
acutangula	Dishcloth G.	26	McKay 1930	ToV	Old World
cylindrica (*aegyptiaca*)	Loofah	26	Yamaha & S. 1936	ToTV	O.W. Trop.
v. *gigantea*		26	McKay 1930		*cult*

104. BEGONIACEAE

BEGONIA $x=6, 7, 9$ $x_2=13\ (6+7)$

$x=6$				
heracleifolia	24	Hamel 1937	H	Mexico
hirsuta	24	M. & O. 1936	H	Guiana
nelumbiifolia	24	Hamel 1937	H	Mexico
incana	24	,, ,,	H	,,
haageana	48	M. & O. 1936	H	Brazil
fuchsioides	60	,, ,,	H	Mexico
$x=7$				
incana	28	Mereminski 1936	H	Mexico
socotrana	28	M. & O. 1936	H	Socotra
carminata	42	,, ,,	H	*cult*
coccinea	42	,, ,,	H	S. America
maculata	56	,, ,,	H	Brazil
metallica	70	,, ,,	H	,,
gracilis	84	,, ,,	H	Mexico
$x=9$				
dichotoma	36	Hamel 1937	H	Venezuela
longipes	36	,, ,,	H	Mexico
vitifolia	36	,, ,,	H	Brazil
albo-picta (maculata)	54	M. & O. 1936	H	,,
angularis	54	Hamel 1937	H	,,
wilsonii	54	M. & O. 1936	H	Szechuan
$x_2=13$				
dregei	26	M. & O. 1936	H	Brazil
evansiana	26	,, ,,	H	Japan
schmidtiana	26	Pastrana 1932	H	Brazil
argenteo-guttata	52	M. & O. 1936	H	*cult*
margaritae	52	,, ,,	H	,,

105. DATISCACEAE

DATISCA $x=11$

cannabina	22	Sinoto 1929	H	S.W. Asia, Him.

106. CARICACEAE

CARICA $x=9$

candamarcensis	Mountain Papaw	18	Heilborn 1921	F	Trop. Am.
cauliflora		18	Storey 1941	—	Venezuela
chrysopetala		18	,, ,,	—	Ecuador
papaya	Papaya, "Papaw"	18	Eichhorn 1937b	FM	Trop. Am.
peltata		18	Storey 1941	—	Nicaragua
pentagona		18	,, ,,	—	Ecuador
pubescens		18	Kumar & A. 1942a	—	Guatemala
quercifolia		18	E.K.J.	—	S. America

107. CACTACEAE

ACANTHOCEREUS $x=11$					
pentagonus		22	Beard 1937	—	Trop. Amer.
ASTROPHYTUM $x=11$					
asterias		22	Stockwell 1935	—	Mexico
CARNEGIA $x=11$					
gigantea		22	Stockwell 1935	—	Mex., Cal., Ariz.
CORYPHANTA $x=11$					
runyonii		22	Stockwell 1935	—	Mexico
DOLICOTHELE $x=11$					
longimamma		22	Stockwell 1935	—	Mexico
ECHINOCEREUS $x=11$					
angusticeps etc.		22	Beard 1937	H	Texas
engelmannii		44	Stockwell 1935	H	California
ECHINOFOSSULOCACTUS $x=11$					
grandicornis		*c.* 22	Beard 1937	—	Mexico
EPIPHYLLUM $x=11, 12$					
strictum etc.		22	Beard 1937	—	Cuba
truncatum		24	Sugiura 1936b	—	Brazil
ESCOBARIA $x=11$					
runyonii		22	Stockwell 1935	—	Mexico
FEROCACTUS $x=11$					
hamatocanthus		22	Beard 1937	H	Mex., Texas
HAMATOCACTUS $x=11$					
setispinus		22	Beard 1937	—	Texas
HOMALOCEPHALA $x=11$					
texensis		22	Stockwell 1935	—	Texas
HYLOCEREUS $x=11$					
cubensis etc.	Night-blooming Cereus	22	Beard 1937	H	Cuba
LOPHOCEREUS $x=11$					
schottii		22	Stockwell 1935	—	Ariz., Mex., Cal.
LOPHOPHORA $x=11$					
williamsii		22	Beard 1937	—	Mex., Tex.
MAMMILARIA $x=12$					
glochidiata		24	Sugiura 1931	H	Mexico
MEDIOCACTUS $x=11$					
coccineus		44	Stockwell 1935	—	E. S. Amer.

EOMAMMILARIA $x=11$					
planata etc.		22	Stockwell 1935	H	Texas
ompressa etc.		44	Beard 1937	H	Mexico
YCTOCEREUS $x=11$					
erpentinus		22	Beard 1937	H	Mexico
HIPSALIS $x=11$					
esembrianthemoides		22	Beard 1937	H	Brazil
CHLUMBERGIA $x=11$					
usseliana		22	Stockwell 1935	—	Brazil
ELENICEREUS $x=11$					
ondurensis etc.		22	Beard 1937	H	C. Amer.
HELOCACTUS $x=11$					
icolor		22	Stockwell 1935	—	Mexico
ERKLEOCEREUS $x=11$					
laber		22	Beard 1937	—	Tr. Amer.
ILCOXIA $x=11$					
oselgeri		22	Beard 1937	—	—
OPALAEA (OPUNTIA) $x=$					
occinellifera	Cochineal C.	—		DFo_1	Mexico
PUNTIA $x=11$ [Apomixis]					
rasiliensis		22	Stockwell 1935	H	S. Braz., Argent.
anta rita		22	,, ,,	H	Arizona
olyacantha		22, 44, 66	M. & S. 1935	H	N. America
iscata		*c.* 66	Stockwell 1935	H	Arizona
haecantha		66	,, ,,	H	New Mex.
illenii	Prickly Pear	—		FFo_1	Sub.-Tr. Amer.
cus-indica		—		F	S. America
una	Tuna	—		F	,,
ulgaris	Barbary Fig	—		FH	N. America
ERESKIA $x=12$					
mapola		24	Neumann 1935	H	Patagonia
culeata	Barbadoes Gooseberry	—		F	W. Indies
randifolia	Bleo	—		HV	Mex., C. Amer.
YGOCACTUS $x=12$					
runcatus	Crab Cactus	24	Stockwell 1935	H	Brazil

108. THEACEAE (TERNSTROEMIACEAE)

AMELLIA (THEA) $x=15$					
ssamica	Assam Tea	30	Yamashita 1937d	B	Assam
aponica	Camelia	30	Morinaga & F. 1931a	BHO	Japan, China

CAMELLIA (*cont.*)					
sinensis	Chinese Tea	30	Simura 1935	BM	*cult*, China
v. *macrophylla*		45	Karasawa 1935		
		60	Simura 1935,		
caudata	Wild Tea, Letpet	—		B	Himalayas
kissi	Wild Tea, Letpet	—		B	Him., Bur., China
oleifera	Tea Oil Pl.	—		O	E. Asia
sasanqua	Tea Oil Pl.	—		HOP	China, Jap.
TERNSTROEMIA *x*=?					
japonica		50	Morinaga & F. 1931	H	Sub-Trop. Asia
GORDONIA					
lasianthus	Loblolly Bay	—		D	N. America
HAPLOCLATHRA					
paniculata	Mura Piranga Tree	—		W	Brazil

111. CARYOCARACEAE

CARYOCAR					
amygdaliferum	Caryocar	—		N	Ecuador
brasilense	Piquia Oil Pl.	—		NO	Brazil
butyrosum	Pekea	—		NW	Guiana
nuciferum	Butternut	—		NW	Trop. Amer.
tomentosum	Sawari Nut	—		NW	,, ,,
villosum	Piquia Nut	—		NW	,, ,,

112. ACTINIDIACEAE

ACTINIDIA *x*=?					
arguta	Tara Vine	*c*. 116	Bowden 1940b	H	Him., Jap., Manch.
chinensis	Chinese Gooseberry	*c*. 116	,, ,,	HFVit	China
polygama	Silver Vine	*c*. 116	,, ,,	HF	N. Japan
fairchildii (*arguta* × *chinensis*)		*c*. 132	,, ,,	F	*cult*
callosa	Kokuwa	—		F	Jap., Manch.

114. OCHNACEAE

OCHNA *x*=7 [Apomixis]					
serrulata	Natal Pear	35	Chiarugi 1930b	H	S. Africa
afzelii		—		T	Trop. Afr.
barteri		—		T	,,
LOPHIRA					
alata	Meni Oil T.	—		OW	Trop. Afr.
SAUVAGESIA					
erecta	Creole Tea	—		B	Trop. Amer.

116. DIPTEROCARPACEAE

BALANOCARPUS					
heimii		—		Re	Malaya
utilis		—		ReW	India
maximus	Chengal Penak	—		Re	Malaya
DIPTEROCARPUS					
tuberculatus	Eng	—		OW	E. India
turbinatus	Damar T.	—		ReW	Ind., E. Ind.
DRYOBALANOPS					
aromatica	Sumatra Camphor T.	—		ReW	E. Indies
HOPEA					
micrantha	Damar T.	—		ReW	Malaya
parviflora	Malabar Ironwood	—		W	India
odorata	Thingam			MRe	Burma
SHOREA					
crassifolia		—		—	—
robusta	Sal Tree	—		ReW	India
VATERIA					
indica	Indian Copal T.	—		ReW	S. India

118. MYRTACEAE

MYRTUS $x=11$					
communis	Myrtle	22	Greco 1929	HPSp	Med., S.W. Asia
EUCALYPTUS $x=10?, 11$					
globulus	Eucalyptus, Blue Gum	20	Sugiura 1936b	OW	Australia
		22	McAulay *et al.* 1936		
citriodora	Lemon-Scented G.	20	Sugiura 1936b	OW	„
gummifera		22	Smith-White 1942	OW	„
johnstoni		22	McAulay *et al.* 1936	W	„
obliqua		—		W	„
rostrata	Red Gum	—		DMW	„
leucoxylon	Iron-Bark Tree	—		W	„
diversifolia	Karri Timber	—		W	„
marginata	Jarrah	—		W	„
EUGENIA $x=11$ [Apomixis]					
malaccensis	Malacca Apple	22	van der Pijl 1934	F	Trop. Asia
jambos	Rose Apple	28, *c.* 42 *c.* 54	„ „ „	F	„
cumini (*jambolana*)	Jambalam	*c.* 40	„ „ „	ADFW	India

EUGENIA (*cont.*)					
aquea	Rosewater Jamb	—		F	India, Mal
aromatica (*caryophyllata*)	Clove Tree	—		MOSp	Moluccas
brasiliensis (*dombeyi*)	Brazil Cherry	—		DF	Brazil
eucalyptoides	Native Peas	—		F	Australia
fruticosa	Ban Jam	—		F	Him., Bur
javanica	Jum Rool	—		F	E. Indies
uniflora (*michelli*)	Surinam Cherry	—		FH	Brazil
CALISTEMON $x=11$					
citrinus	Bottle-brush Tree	22	E.K.J.	HO	Australia
FEIJOA $x=11$					
sellowiana	Pineapple—Guava, Fijoa	22	Bowden 1940a	F	Brazil
PIMENTA $x=11$					
acris	Lemon-Scented Allspice	22	E.K.J.	PSp	W. Indies
officinalis	Pimento	—		MSp	„
PSIDIUM $x=11$					
guajava	Guava	22	E.K.J.	VitCF	Trop. Am.
araca	Brazilian G.	—		F	Brazil
arboreum	Wild Guava	—		F	„
cattleianum	Purple or Gooseberry G.	—		F	„
montanum	Spice G.	—		F	W. Indies
MELALEUCA					
leucodendron	Cajaput Oil Pl.	—		M	Trop. Asia

119. LECYTHIDACEAE

BERTHOLLETIA					
excelsa	Brazil Nut	—		NO	Guiana
COUROUPITA					
guianensis	Cannonball T.	—		HSh	Trop. Ame
GRIAS					
cauliflora	Anchovy Pear	—		F	W. Indies
LECYTHIS					
grandiflora	Wadadura T.	—		W	Guiana
ollaria	Monkey Pot	—		NW	Trop. Ame
usitata	Sabucaia Nut	—		N	„ „
zabuccijo	Paradise Nut	—		N	Guiana

120. MELASTOMACEAE

MELASTOMA	$x=14$				
candidum		28	Sugiura 1936b	H	China
malabathricum		—		H	India
MEMECYLON					
edule		—		DW	India

121. COMBRETACEAE

TERMINALIA					
angustifolia	Bois Benzoin	—		M	Mauritius
arjuna		—		DW	Ind., Bur.
belerica	Bahera Tree	—		DM	India
catappa	Indian Almond	—		NW	India, Mal.
chebula	Myrobalan T.	—		DMW	Trop. Asia
tomentosa	Asan Wood	—		Fo$_1$DW	Ind., Bur.
edulis		—		F	E. Indies
ANOGEISSUS					
acuminata		—		DW	India, Mal.
latifolia	Gun Ghati	—		DMW	Ind., S.W. Asia
QUISQUALIS					
indica	Rangoon Creeper	—		HMN	Trop. Asia & Afr.

122. RHIZOPHORACEAE

BRUGUIERA					
conjugata	Tumu	—		DMW	E. Afr.—Polynesia
cylindrica	Puteh	—		DW	India, Mal.
RHIZOPHORA					
candelaria	Mangrove R.	—		DW	India—Pacific
mucronata	„	—		DW	„
POGA					
oleosa	Poga Nut T.	—		N	Congo

123. HYPERICACEAE

HYPERICUM	$x=8, 9, 10, 12.$	$x_2=19$ (9+10)	[Apomixis]		
boreale (*mutilum*)		16	Hoar & H. 1932	—	N. America
punctatum		16	Hoar 1931	—	„
senanense		16	M. & S. 1935		Japan
aureum		18	Hoar & H. 1932	H	S.E.: U.S.A.
kalmianum		18	„ „	H	E:N. Amer.
polyphyllum		18	Sugiura 1936a		Sicily
prolificum		18	Hoar & H. 1932	H	E:N. Amer.
patulum		36	Sugiura 1936a	H	China

HYPERICUM (*cont.*)					
calycinum	St. John's Wort	20	Maude 1940	H	S.E. Eur.
gentianioides	Orange Grass	24	Hoar & H. 1932	—	N. America
perforatum		32, 36	„ „	—	Europe
virginicum		38	„ „	—	N. America

126. GUTTIFERAE

CALOPHYLLUM *x*=?					
inophyllum	Pinnay T.	*c.* 32	E.K.J.	OW	Tropics
GARCINIA [Apomixis]					
cambogia	Goraka	—		DSp?	E. Indies
hanburyi	Gamboge	—		D	Siam
indica	Kokum			DM	India
mangostana	Mangosteen	—		F	Moluccas
morella	Ceylon Gamboge	—		D	Mal., E. Ind.
xanthochymus	Cochin Goraka	—		F	„ „
MAMMEA					
americana	Mammey Apple	—		FD	Trop. Amer.
MESUA					
ferrea	Ironwood	—		FOW	Ind., Ceylon
PENTADESMA					
butyracea	Butter T.	—		OW	W. Africa
SYMPHONIA					
globulifera	Hog Gum T.	—		O	N. Brazil

128. TILIACEAE

CORCHORUS *x*=7					
acutangulus		14	Banerji 1932	T	Tropics
capsularis	Jute	14	Nakajima 1936	T	India
olitorius	Jew's Mallow	14	Banerji 1932	(V)T	„
GREWIA *x*=9					
parviflora		18	Dermen 1932a	T	China
latifolia		—		F	Malaya
TILIA *x*=41					
argentea (*tomentosa*)	White L.	*c.* 80	Wallisch 1930	TW	Europe
cordata	Linden	82	Dermen 1932a	MW	„
glabra (*americana*)		82	„ „	W	N. America
neglecta		82	„ „	W	„
oliveri		82	„ „	WC	China
petiolaris	Weeping W. L.	82	„ „	H	Hungary
platyphyllos		82	„ „	MShW	Europe
vulgaris (*europaea*)	Lime Tree	82	„ „	MW	„

TILIA (*cont.*)					
amurensis	Bass Wood	164	Dermen 1932a	TW	Siberia
insularis		164	" "	W	Japan
maximowicziana		164	" "	W	"
tuan		164	" "	W	China
BERRIA					
cordifolia	Trincomali W.	—		W	Ceylon
ELAEOCARPUS					
edulis		—		FTO	India
ganitras	Utrasum Beed T.	—			"
serratus	Ceylon Olive	—		F	India, Mal.
grandis	Blue Fig	—		F	Australia
MUNTINGIA					
calabura	Calabura	—		FT	W. Ind., Mex.
TRIUMFETTIA					
cordifolia	Burweed	—		T	Tropics
bartramia	Champadang	—		T	"

130. STERCULIACEAE

GUAZUMA $x=8$					
tomentosa	Bastard Cedar	16	Youngman 1931	(F)TW	Tr. Am.
THEOBROMA $x=8$?					
cacao	Cocoa	16 20	Heyn 1930 Davie 1933	BM	*cult*, Brazil
angustifolium		—		—	Trop. Amer.
bicolor	Peru cocoa	—		B	"
grandiflorum	Cupassu	—		—	"
microcarpon	Cacao nana	—		—	"
ovatifolium		—		—	"
peruvianum		—		—	"
simiarum		—		—	"
speciosum		—		—	"
spruceanum	Cacao azul	—		—	"
subincanum		—		—	"
velutinum		—		—	"
HERRANIA					
albiflora		—		—	Trop. Amer.
balaoensis		—		—	"
pulcherrima		—		—	"
purpurea		—		—	"
STERCULIA (FIRMIANA) $x=8, 10$					
platanifolia	Parasol T.	32 40	Sugiura 1936b Chatelier 1936	T	China, Jap.
colorata		—		HT	Ind., Siam
urens	Kadaya Gum	—		ReT	India
villosa		—		T	Ind., Burma

COLA $x=?$					
acuminata	Kola nut	40	E.K.J.	BMSp	Trop. Afr.
ABROMA					
augusta		—		T	Trop. Asia

131. BOMBACACEAE

BOMBAX $x=?$					
malabaricum	Silk Cotton	*c.* 72	E.K.J.	OTW	S.E. Asia
cyathophorum		—		TW	Brazil
insigne		—		TW	Ind., Mal.
CEIBA (ERIODENDRON) $x=?$					
pentandra	Silk Cotton T., Kapok T.	72, 80	Heyn 1936	(O)T	Trop. Asia & Afr.
occidentale (*pentandra* v. *caribaea*)		88	" "	(O)T	Trop. Amer
ADANSONIA					
digitata	Baobab T.	—		MT	C. Africa
gregori	Australian B.	—		F	Australia
DURIO					
zibethinu	Durian	—		FW	Malaya
OCHROMA					
lagopus	Balsa Wood	—		W	Trop. Amer

132. MALVACEAE

SPHAERALCEA $x=5, 17, 33$					
coccinea	Globe Mallow	10	Webber 1936	H	W:N. Amer
coulteri (and 5 spp.)		10	" "	—	Arizona
miniata		10	Skovsted 1935	H	Trop. Amer
fendleri		10, 20	Webber 1936	H	California
		15	E.K.J.		*cult*
angustifolia		10, 20	Webber 1936	H	Mexico
ambigua		10, 20, 30	" "	H	W:N. Amer
emoryi		20, 30, 50		—	"
abutiloides		34	Webber 1936	—	Bah., Carol
umbellata		34	Skovsted 1935	H	Mexico
rivularis		66	Webber 1936	—	N. America
PAVONIA $x=7$					
kotschyi		*c.* 28	Skovsted 1935	—	Abyssinia
praemorsa		28	" "	H	S. Africa
schimperiana		28	" "	—	Abyssinia
spinifex		42, 112	" "	H	S. America
hastata		56	" "	H	"
URENA $x=7$					
lobata	Aramina	28, 56	Skovsted 1941	T	Tropics
sinuata		28	" "	—	"
BASTARDIA $x=7$					
viscosa		28	Skovsted 1941	—	W. Indies

MALACHRA $x=7$					
alceifolia		56	Skovsted 1935	T	Tropics
capitata		56	„ „	T	„
fasciata		c. 112	„ „	—	Venezuela
MALVAVISCUS $x=7$					
arboreus (*mollis*)		c. 42	Skovsted 1935a		Trop. Amer.
ALTHAEA $x=7$					
cannabina		28, 84	Skovsted 1935, 1941	T	Eur., S.W. Asia
apterocarpa		42	„ „	—	S.W. Asia
ficifolia	Antwerp H.	42	„ „	H	Europe
officinalis	Marsh Mallow	c. 42	Davie 1933	HM	Eur., S.W. Asia
pallida		42	Skovsted 1935	H	Hung., Balk.
rosea	Hollyhock	42, 56	Sugiura 1936b	H	China
sinensis		70	Skovsted 1935	H	„
armeniaca		c. 84	„ „	H	S.W. Asia
hohenackeri		c. 84	„ „	H	„
kragujevacensis		c. 84	„ „	H	S.E. Europe
CALLIRHOË $x=6, 7$					
involucrata	Poppy Mallow	c. 24	Kesseler, T. 1936	H	C. U.S.A.
as *lineariloba*		42	Skovsted 1935		Mex., Texas
LAVATERA $x=7, 22$					
trimestris (as *Modiola*)		14	Sugiura 1936b	H	Medit.
arborea	Tree Mallow	42	Skovsted 1935	H	Europe
micans		42	Davie 1935	—	Spain
olbia		42	Nakajima 1936	H	S. Europe
cachemiriana		42	Skovsted 1935a	H	Himalayas
plebeia		43?	„ „	—	Australia
thuringiaca		44	„ „	—	S. Europe
triloba		44	Davie 1935	—	Spain
mauretanica		c. 84	Skovsted 1935	H	N. Africa
cretica		c. 112	„ „	—	Medit.
MALVA $x=7$					
moschata	Musk Mallow	42	Skovsted 1935	H	Europe
nicaensis		42	„ „	—	Medit.
rotundifolia (*neglecta*)		42	„ „	—	Eur., N. As.
sylvestris		42	„ „	H	Eur., T. As.
alcea		84	„ „	H	Europe
verticillata		c. 84	„ „	—	Eur., As., N. Afr.
brasiliensis		c. 112	„ „	—	Brazil
crispa		c. 112	„ „	H	Europe
pusilla (*borealis*)		42, 76	„ „, 1941	—	Eur., N. As.
WISSADULA $x=7$					
contracta etc.		14	Skovsted 1941	—	Tropics

NAPAEA *x*=7					
dioica		28	Skovsted 1935	—	N. America
ABUTILON *x*=7, 8					
auritum etc.		14	Skovsted 1941	—	Ceylon
crispum		14	” 1935	T	Tropics
glaucum		28, 42	” 1941	—	Trop. Afr.
avicennae	Maba	42	” ”	HT	*cult*, China
giganteum		42	” ”	—	Trop. Amer.
indicum	Indian Mallow	42	” ”	MT	Tropics
molle		42	” ”	—	Peru
striatum		16	” ”	H	Brazil
umbellatum		16	” ”	—	W. Indies
SIDA *x*=7, 8					
spinosa	Cuba Jute	14, 28	Skovsted 1941	T	Tropics
acuta		14, 28	” ”	—	C. America
triloba		28	” ”	—	S. Africa
grewioides		*c.* 28	” ”	T	Ind.,Tr.,Afr.
veronicaefolia		14, 56	” ”	—	Trop. Amer.
rhombifolia	Sida Hemp	14, 28	” ”	TM	*cult*, India
v. *canariensis*		16	Nascimento 1941		
tuberculata		32	” ”	—	Brazil
corrugata etc		16	Skovsted 1941	—	Queensland
MODIOLA *x*=9					
multifida		18	Skovsted 1935	H	W:N. & S. Amer.
HIBISCUS *x*=7, 11, 12, 15, 16, 17, 18, 19, 20					
x=7					
gossypinus (*gossypium*)		28	Skovsted 1935	—	S. Africa
trionum	Flower-of-an-Hour	28	Medvedeva 1936	H	Trop. Afr.
		56	Skovsted 1935		
x=11					
phoeniceus etc.		22	Skovsted 1941	—	India
manihot ?		66	Medvedeva 1936	HT	S.E. Asia
x=15					
lepidospermus		30	Medvedeva 1936	—	Trop. Afr.
pedunculatus		30	” ”	—	S. Africa
manihot ?		60	Teshima 1933	HT	S.E. Asia
x=17					
parkeri		34	Skovsted 1935	—	Madagascar
solandra		34	Medvedeva 1936	—	Trop. Asia, Africa
vitifolius		34	Skovsted 1935	—	Tropics
x=18					
cannabinus	Gamboor, Deccan Hemp	36	Skovsted 1935	VT	O.W. Trop.
		36	Medvedeva 1936		
abelmoschus	Moskokva	72	Skovsted 1935	HMP	India.
bifurcatus		72	Medvedeva 1936		S. Amer.
sobdariffa	Roselle	36, 72	Skovsted 1941	HVT	O.W. Trop.

HIBISCUS (*cont.*)					
esculentus	Okra, Lady's	72	Teshima 1933	HV	Abys. *cult*
	Fingers	130	Skovsted 1935		
tiliaceus	Mahoe	80, 96	Youngman 1931	T	O.W. Trop.
rosa-sinensis	Shoe Flower	92	Skovsted 1935	HDV	E. Asia
	Rose of China	144	Youngman 1927		
diversifolius		144, *c.* 180	Skovsted 1941	T	O.W. Trop.
x=19					
coccineus		38	Skovsted 1935	H	N. America
militaris		38	Nakajima 1936	—	„
palustris		38	Medvedeva 1936	H	„
roseus		38	Skovsted 1935, 1941	H	Spain
x=20					
physaloides etc.		40	Skovsted, 1941	—	E. Africa
mutabilis	Changing Rose,	*c.* 92	Skovsted 1935	HT	Bur., China
	Cotton Rose	100	Medvedeva 1936		
syriacus etc.	Rose of Sharon	80	Skovsted 1941	H	E. Asia
ANODA *x*=15					
hastata		30	Skovsted 1935	H	Mex., Peru
wrightii		*c.* 60	„ „	H	New Mexico
KITAIBELIA *x*=11					
lindemuthi		44	Skovsted 1935	H	*cult*
vitifolia		42, 44	„ „	H	E. Europe
MALOPE *x*=11					
hispida		44	Skovsted 1935	—	Algeria
trifida		44, 50	„ „	H	Sp., N. Afr.
MALVASTRUM *x*=11, 12, 15, 16, 17, 21					
capense	False Mallow	44	Skovsted 1935	H	S. Africa
scoparium		24	„ „	—	Trop. Amer.
coromandelianum		24	„ „	—	Tropics
spicatum (*tricuspidatum*)		24	„ „	H	Australia
limense		30	„ „	H	Peru
peruvianum		30	„ „	—	Mexico
greenmanianum		32	„ „	—	„
fasciculatum (and 5 spp.)		34	Webber 1936	H	California
grossulariaefolium		42	Skovsted 1935	—	S. Africa
CIENFUGOSIA (FUGOSIA) *x*=10, 11, 13					
heterophylla		20	Longley 1933	—	S. America
hildebrandtii		22, 26	Skovsted 1935	—	Trop. Afr.
SIDALCEA *x*=10, 13					
candida		20+*f*	Skovsted 1935	H	Rocky Mts.
parviflora		26	Davie 1935	H	S. Calif.
malviflora	Checkerbloom	*c.* 60	Skovsted 1935	H	California
KOKIA *x*=12					
dryarinoides etc		24	Skovsted 1941	H	Hawaii
GOSSYPIOIDES *x*=12					
kirkii		24	Skovsted 1935	—	Trop. Africa

GOSSYPIUM $x=12, 13$

$x=12$					
brevilanatum		24	Hutchinson 1943	—	Madagascar
$x=13$					
$2x$—Old World Group etc.					
abyssinicum	Abyssinian C.	26	Webber 1934	—	Abyssinia
anomalum	Wild O.W.C.	26	Skovsted 1935	T	Trop. Africa
arboreum	Asiatic Tree C.	26	Zaitzew 1927	T	Asia (*cult*)
		(52)	Harland 1940		
aridum	Wild New World C.	26	Skovsted 1933	—	Mexico
armourianum	Calif. Wild C.	26	,, ,,	—	L. Calif.
cernuum	Garo Hill C.	26	Webber 1934	T	Asia (*cult*)
davidsonii	Wild Mexican C.	26	Skovsted 1933	—	W:N. Amer.
harknessi		26	Webber 1934	—	—
indicum	Desi-kappas	26	Banerji 1929	T	Asia (*cult*)
intermedium		26	Webber 1934	T	E. Asia
klotzianum		26	Skovsted 1935	—	Galapagos
lanceaeforme		26	,, 1933	—	Mexico
mollisoni		26	Denham 1924	—	Trop. Asia
nanking	Chinese Cotton	26	Zaitzew 1929	T	Asia (*cult*)
neglectum	Bengal Cotton	26	Denham 1924	T	India
obtusifolium	Coconades,	26	Nikolajewa 1923	T	Asia (*cult*)
	Nadam C.			—	
raymondii		26	Barducci & M. 1941	—	Peru
roseum (*arboreum*)		26	Denham 1924	T	*cult*
sanguineum	Red Flowered C.	26	,, ,,	T	Java
stocksii	Wild Sindh C. Arabian C.	26	Skovsted 1935	—	India
sturtii	Wild Australian C.	26	,, ,,	H	Australia
trilobum	Arizona Wild C.	26	,, ,,	—	N. America
herbaceum	Broach Kappas	26	Zaitzew 1927	MT	Asia (*cult*)
		(39)	Skovsted 1933		
		(52)	Beasley 1940		
$4x$—New World Group					
barbadense	Egyptian or Sea Island C.	52	Nikolajewa 1923	MT	Am. (*cult*)
		(26)	Skovsted 1934a		
		(104)	Beasley 1940		
brasiliense	Chain Cotton	52	Webber 1934	T	Trop. Am.
contextum		52	,, ,,	—	Mexico
darwinii	Galapagos C.	52	,, ,,	T	Galapagos
		52	Skovsted 1935		
hirsutum	Upland Cotton	52	Zaitzew 1927	T	Am. (*cult*)
		(104)	Harland 1940		
hopii		52	Webber 1934	T	Texas
jamaicense (*barbadense*)		52	,, ,,	T	Am. (*cult*)
mexicanum	Mexican Cotton	52	Nikolajewa 1923	T	Mex., Brazil
morilli		52	Webber 1934	—	Mexico

GOSSYPIUM (*cont.*)					
mustelinum	W. Brazilian C.	52	Nikolajewa 1923	T	Braz., Col. (*cult*)
palmeri	W. Mexican C.	52	Baranov *et al.* 1930	T	Mexico
patens		52	Webber 1934	T	„
peruvianum	Peruvian C.	52	Zaitzew 1927	T	America
punctatum		52	Nikolajewa 1923	T	Am. (*cult*)
purpurascens	Bourbon Cotton	52	Zaitzew 1927	T	„
schotti	Split Leaf C.	52	Webber 1934a	T	Mex., Para.
taitense	Fiji Cotton	52	Skovsted 1935	T	Tahiti, Fiji
tomentosum	Hawaiian C.	52	„ 1933	T	Hawaii
vitifolium	Ishan Cotton	52	Zaitzew 1927	T	S. Am. (*cult*)
THERBERIA (GOSSYPIUM) $x=13$					
thespesioides		26	Skovsted 1933	—	Mexico
ERIOXYLUM $x=13$					
aridum		26	Skovsted 1933	—	Mexico
THESPESIA $x=13$					
populnea	Portia Tree	26	Youngman 1931	DTShW	Trop. O.W.
macrophylla		26	„ „	W	„
rogersii		26	Skovsted 1941	—	Trop. Africa
SHANTZIA $x=13$					
garckeana		26	Longley 1933	—	Trop. Africa

133. MALPIGHIACEAE

BRYSONIMA					
spicata	Shoemaker's Bark	—		D	W. Indies
MALPIGHIA					
coccigera		—		H	W. Indies
glabra	Barbados Cherry	—		FH	Trop. Amer.
STIGMAPHYLLON					
ciliatum		—		H	W. Indies
littorale		—		H	Brazil
THRYALLIS					
glauca		—		H	Trop. Amer.

135. ERYTHROXYLACEAE

ERYTHROXYLON $x=12$					
coca	Cocaine Plant	24	Heitz 1929, E.K.J.	M	Peru
cuneatum	Chintamula	—		MW	E. Indies
novo-granatense	Java Coca	—		M	Andes
truxillense	Peruvian C.	—		M	Peru

136. EUPHORBIACEAE

S.F. I: Crotonoideae

EUPHORBIA	$x=6, 7, 8, 9, 10$ (Apomixis)				
$x=6$					
capitata		12	Harrison, T. 1931	—	Tropics
cereiformis		12	„ „	H	S. Africa
		20?	Perry 1943		
dulcis		12	„ „	—	Europe
welwitschii		12	Harrison, T. 1931	—	Portugal
		28?	Carano 1926		
pekinensis		24	Perry 1943	—	China
$x=7$					
nutans (*preslii*)		14	Perry 1943	—	N. America
dentata		14, 28, 56	„ „	—	„
exigua		28	„ „	H	Portugal
fulgens		28	„ „	H	Mexico
geniculata		28	Moyer 1934	—	Trop. Amer.
graeca		28	Perry 1943	—	Gr., A. Min.
hypericifolia		28	„ „	—	Tropics
ipecacuanha	Ipecac Spurge	28	„ „	H	N. America
corollata	Flowering Sp.	28	„ „	—	„
		30	Harrison, T. 1931		
pithyusa		28	Perry 1943	—	Medit.
		36	Harrison, T. 1931		
platyphyllos		28	Perry 1943	—	Eur., N. Afr.
		36	Harrison 1930		
pulcherrima	Poinsettia	28	Moyer 1934	H(V)	Mexico
stricta		28	Perry 1943	H	Eur., Med.
helioscopia		42	Harrison, T. 1931		Eur., N.Asia
		42	Perry 1943		
heterophylla	Mex. Fire Pl.	56	Moyer 1934	HM	S. America
iberica		56	Perry 1943		Caucasus
marginata	Snow-on-the-Mountain	56	„ „	H	N. America
$x=8$					
altissima		16	Perry 1943	—	A. Min., Syr.
boetica		16	„ „	—	Spain
gerardiana		16	„ „	—	Europe
		18	Harrison, T. 1931	—	
lagascae		16	Perry 1943	—	Sardinia
paralias		16	„ „	—	—
peplus	Petty Spurge	16	Griesinger 1937	—	Eur., Med.
polychroma (*epithymoides*)		16	Perry 1943	H	E. Europe
portlandica		16	„ „	—	W. Europe
procera (*pilosa*)		16	„ „	H	Eur., N. As.
pterococca		16	„ „	—	Medit.
pubescens		16	„ „	—	„
segetalis		16	„ „	—	Europe

$x=9$					
amygdaloides	Wood Spurge	18	Harrison, T. 1931	—	Eur., S.W. Asia
pinea		18	,, ,,	—	Medit.
terracina		18	Harrison 1930	—	,,
verrucosa		18	,, ,,	—	Europe
splendens	Crown of Thorns	36	Sugiura 1936a	H	Madagascar
		40	Harrison, T. 1931		
$x=10$					
aphylla		20	Perry 1943	H	Canary Is.
biglandulosa		20	,, ,,	H	Gr., A. Min.
bulbalina		20	,, ,,	—	S. Africa
caput-medusae	Medusa's Head	20	,, ,,	H	,,
meloformis	Melon S.	20	Griesinger 1937	H	,,
obesa		20	,, ,,	H	S. Africa
		20	Perry 1943		
rigida		20	Harrison, T. 1931	—	Gr., A. Min.
schimperi		20	,, ,,	H	Arabia
characias		20	Perry 1943		Europe
clava		20	,, ,,	H	S. Africa
cyparissias	Cypress S.	20	,, ,,	H	Europe
glauca		20	,, ,,		N. Zealand
lathyris	Caper Sp.	20	,, ,,	HV	S. Europe
melapetala		20	,, ,,		Sicily
micrantha (stricta)	—	20	,, ,,	H	Eur., Med.
monteiri		20	,, ,,	H	Trop. Afr.
myrsinites		20	,, ,,	H	S. Europe
nubica		20	,, ,,	H	N. Africa
palustris		20	,, ,,	H	Europe
regis-jubae		20	,, ,,	H	Tenerife
schimperiana		20	,, ,,	H	Abyssinia
royleana		30	Bhalla 1941	H	Himalayas
barnhartii (trigona)	Susuru	40	,, ,,	M	Ind., Moluc.
granulata		40	Hagerup 1932		Trop. Afr., & Asia
similis		40	Perry 1943	H	S. Africa
albaspina		60	,, ,,		*cult*
hermentiana		60	,, ,,	H	S. Africa
echinus		*c.* 100	,, ,,	H	Morocco
ferox		*c.* 200	,, ,,	H	S. Africa
antiquorum		—		M	India
antisyphilitica	Candelilla, Wax Plant	—		O	Mex., Texas
balsamifera	Balsam S.	—		MV	Canary Is.
intisy	Intisy	—		Ru	Madagascar
rhipsaloides	Potato Gum	—		Ru	N. Afr., Ind.
tirucalli	Milk Bush	—		(Ru)M	Tr. Afr., India

ACALYPHA $x=7$					
ostryaefolia (*caroliniana*)		14	Perry 1943	—	N. America
virginica		28	,, ,,	—	,,
wilkesiana (*tricolor*)	Copper Leaf			H	S. Pac. Is.
v. *triumphans*		28	,, ,,		
v. *musaica*		c. 224	,, ,,		
hispida	Chenille Plant	c. 112		HM	E. Indies
indica		—		M	India
poiretii		—		M	Trop. Amer
siamensis	Hermit's Tea	—		BH	Siam, Mal
BALIOSPERMUM $x=7$					
axillare (*montanum*)		28	Perry 1943	M	Ind., Siam Java
SEBASTIANA $x=7$					
ligustrina		56	Perry 1943	M	N. America
CROTON $x=8$					
glandulosus		16	Perry 1943	—	N. & Tr.Am
monanthogynus		16	,, ,,	—	N. America
palmeri		16	,, ,,	—	W:N. Ame
cascarilla		—		M	Bahamas
lacciferus	Croton Lac	—		T	India
tiglium	Purging C.	—		MO	Ind., Mal.
niveus	Copalchi	—		M	Venezuela
MERCURIALIS $x=8$					
annua	Annual M.	16	Yampolsky 1933	MV	Eur., N.Afr
leiocarpa	Mercury	48	Morinaga *et al.* 1929	—	Japan
perennis	Dog's M.	c. 64	Meurman 1925a	M	Eur., W. A
DAPHNIPHYLLUM $x=8$					
macropodum		32	Sugiura 1928a	H	China, Jap.
COLLIGUAJA $x=9$					
odorifera		36	Perry 1943	—	Temp. S. Amer.
HEVEA $x=9$					
brasiliensis	Para-Rubber T.	36	Sugiura 1936a, Perry 1943	Ru	Brazil
collina		36	Ramaer 1935	Ru	,,
guianensis		36	,, ,,	Ru	Guiana
spruceana		36	,, ,,		Brazil
benthamiana		—		Ru	,,
confusa		—		(Ru)	Br. Guiana
lutea		—		Ru	Brazil
HOMALANTHUS $x=9$					
populneus		36	Perry 1943	H	Trop. Asia

MANIHOT $x=9$					
cathartica		36	Doughty 1939	M	—
dulcis	Sweet C.	36	,, ,,	R	Brazil
dichotoma	Tiquie-Man. R.	36	,, ,,	Ru	,,
glaziovii	Ceara Rubber T.	36	,, ,,	RuR	,,
palmata		36	Bowden 1940a	R	,,
tweediana		36	Perak 1940	—	,,
utilissima (*esculenta*)	Tapioca, Cassava	36 (72)	Graner 1935 Graner 1942	R	,,
walkerae		36	Perry 1943	Ru	,,
heptaphylla	Manicoba R.	—		Ru	,,
piauhyensis	Remano-Man. R.	—		Ru	,,
[*utilissima*, incorrect counts,		4, 8, 16, 32	Boiteau 1938, 1941]		
PEDILANTHUS $x=9$					
tithymaloides	Redbird Cactus	36	Perry 1943	H	W. Indies
SAPIUM $x=9$					
sebiferum	Soap Tree	36	Perry 1943	MO	Tropics
aucuparium		—		Ru	Trop. Amer.
STILLINGIA $x=9$					
sylvatica	Queen's Delight	36	Perry 1943	HM	N. America
MALLOTUS $x=9$					
japonicus		72	Sugiura 1936b, Perry 1943	DW	Japan
philippinensis	Kamala	—		DM	Tr. As., Austr.
RICINUS $x=10$					
communis	Castor Oil Pl.	20 (40)	Hagerup 1932 Sidorov & S. 1941	Fo$_1$MO	Tropics
gibsoni		20	Sugiura 1936b	O	,,
sanguineus	Red C.O.P.	20	,, ,,	HO	,,
zanzibariensis		20	Nemec 1910	HO	,,
ALEURITES $x=11$					
cordata	Tung (China Wood Oil T.)	22	Lapin 1937b	O	China, Jap.
fordii	,, ,,	22	,, ,,	O	China
montana	,, ,,	22	,, ,,	IO	Trop. Asia
triloba (*moluccana*)	Candle Nut	44	,, ,,	MO	Malaya
JATROPHA $x=11$					
curcas	Physic Nut	22	Perry 1943	MO	Tropics
gossypiifolia	Wild Cassada	22	,, ,,	HM	Trop. Amer.
multifida	Pinhoeu Oil	22	,, ,,	HOM	,,
EXCOECARIA $x=12$					
acerifolia		24	Perry 1943	MW	O.W. Trop.
CHROZOPHORA					
plicata	Indian Turnsole	—		D	India

CODIAEUM					
variegatum	Garden Croton	—		H	O.W. Trop
HURA					
crepitans	Sand Box T.	—		OSh	Tr. Am., W. Ind.
OMPHALEA					
triandra	Jamaica Cob Nut	—		NO	Jamaica
PYCNOCOMA					
macrophylla	Bomah Nut. T.	—		DMO	Natal

S.F. II : Phyllanthoideae

PUTRANJIVA *x*=7					
roxburghii		14	Perry 1943	FoMO	Ind., Siam
BRIDELIA *x*=7					
retusa		28	Perry 1943	DFoW	Indo, Mal.
PHYLLANTHUS *x*=7					
emblica	Emblie	28	Perry 1943	DMVit.	Trop. Asia
carolinensis		28	,, ,,	—	N. Americ
acidus (*distichus*)	Star Gooseberry	—		F	E. Ind., T As., Mad
niruri		—		DM	Tropics
BREYNIA (PHYLLANTHUS) *x*=7					
nivosa	Snow Bush	56	Perry 1943	H	Pac. Is.
reclinata (*racemosa*)		—		MV	Mal., Java
FLUGGEA *x*=8					
obovata		16	Perry 1943	F	Trop. Afri
virosa		—		DF	O.W. Trc
HALLIOPHYTUM (BERNARDIA) *x*=12					
fasciculatum		24	Perry 1943	—	W:N. Ame
ANTIDESMA					
bunius	Buni	—		FW	Him., Cey
ghaesembilla		—		FW	S.E. As., Trop. Afr

137. CUNONIACEAE

CERATOPETALUM					
apetalum	Lightwood	—		W	N.S. Wale
CUNONIA					
capensis		—		W	S. Africa
WEINMANNIA					
racemosa		—		DW	New Zeal.

139. ESCALLONIACEAE

ANOPTERUS					
glandulosus		—		W	Tasmania
ESCALLONIA					
floribunda		—		H	Andes
grahamiana		—		H	Chile
illinita		—		H	„
rubra		—		H	„
ITEA $x=11$					
ilicifolia		—		H	China
virginica	Sweet Spire	22	Schoennagel, T. 1931	H	N. America

141. GROSSULARIACEAE

RIBES $x=8$

S. 1. Currants

alpinum	Alpine Currant	16	Tischler 1927b	F	Eur., N. As.
americanum	Amer. Black-C.	16	„ „	F	N. America
aureum	Golden C.	16	Darlington 1929b	H	W:N. Amer.
cereum	Wax Currant	16	Tischler 1927b	H	„
fasciculatum	Winterberry C.	16	K. Sax 1931b	—	China, Japan
giraldii		16	„ „	—	China
multiflorum	Russian C.	16	Meurman 1928	—	S. Europe
nigrum	Black C.	16	Darlington 1929b	DF	Eur., N. As., (*cult*)
odoratum	Clove C.	16	Meurman 1928	H	N. America
orientale		16	„ „	F	Him., S.W. Asia
petraeum	African C.	16	Tischler 1927b	F	Eur., N. As.
rubrum (*sativum*)	Red C.	16	Meurman 1928	F	*cult*
sanguineum	Flowering C.	16	Darlington 1929b	H	W:N. Amer.
saxatile	Siberian C.	16	Meurman 1928	F	Siberia
ambiguum	Epiphyte C.	—		F	Japan
bracteosum	Calif. B.C.	—		F	N.W. Amer.
hudsonianum	Hudson Bay C.	—		F	N. Amer.
magellanicum		—		F	Patagonia
nivea	Snake River G.	—		F	N. America
procumbens		—		F	Siberia
prostratum	Stinking C.	—		F	Alaska
rotundifolium	Round Leaf G.	—		F	N. America
warscewiczii	Siberian C.	—		F	Siberia

S. 2. Gooseberries

cynosbati	Prickly G.	16	K. Sax 1931b	F	W:N. Amer.
divaricatum	Coast G.	16	Tischler 1927b	F	„
grossularia (*vulgaris*)		16	Darlington 1927	F	Eur., N. Afr. (*cult*)

RIBES (*cont.*)					
lacustre	Swamp G.	16	Tischler 1927b	F	N. America
leptanthum	Trumpet G.	16	Meurman 1928	—	,,
missouriensis		16	Sax 1931b	F	,,
oxyacanthoides	Smooth G.	16	Darlington 1927	F	,,
setosum	Redshoot G.	16	Tischler 1927b	F	,,
aciculare		—		F	Siberia
nivea		—		F	N.W: U.S.A
rotundifolium		—		F	E: U.S.A.

142. HYDRANGEACEAE

PHILADELPHUS $x=13$					
coronarius	Sweet Mock Orange	26	Bangham, T. 1931	H	S. Europe
delavayi		26	,,	H	China
floridus	Beadle M. O.	26	,,	H	N. America
gordonianus		26	,,	H	Calif.
grandiflorus (*laxus*)		26	,,	H	N. America
incanus	Grey M. O.	26	,,	H	China
inodorus		26	,,	H	N. America
lewisii		26	,,	H	,,
magdalenae		26	,,	H	China
microphyllus		26	,,	H	N. Mexico
nepalensis		26	,,	H	S. Europe
pekinensis		26	,,	H	N. China
pubescens		26	,,	H	N. America
purpurascens		26	,,	H	China
satsumanus		26	,,	H	Japan
subcanus		26	,,	H	China
tomentosus		26	,,	H	Himalayas
virginalis		26	,,	H	*cult*
DEUTZIA $x=13$					
gracilis		26	Schoennagel, T. 1931	H	Japan
hypoglauca		26	K. Sax 1931b	H	China
discolor		*c.* 26	,, ,,	H	Japan
sieboldiana		26	,, ,,	H	,,
parviflora		26	,, ,,	H	China
v. *ovalifolia*		78	,, ,,		
mollis		78	,, ,,	—	China
discolor		104	,, ,,	—	Japan
reflexa		104	,, ,,	—	China
vilmoriniae		104	,, ,,	H	,,
crenata (*scabra*)		130	Schoennagel, T. 1931	H	Japan
schneideriana		130	K. Sax 1931b	H	C. China
JAMESIA $x=16$					
americana		32	K. Sax 1931b	H	N. Mexico

HYDRANGEA $x=18$

arborescens		36	K. Sax 1931b	H	N. America
cinerea		36	" "	H	"
petiolaris (scandens)		36	" "	H	Japan
quercifolia		36	" "	H	N. America
radiata	Silverleaf H.	36	" "	H	"
xanthoneura		36	" "	H	China
virens		36	Sugiura 1931	H	Japan
paniculata		36	M. & S. 1935	H	"
v. *floribunda*		72	Sugiura 1936a		
v. *praecox*		72	K. Sax 1931b		

143. ROSACEAE

I. Primary Group $x=7, 8, 9$

ROSA $x=7$

S. 1. Hultheimia

persica (simplicifolia)		14	Täckholm 1922	(H)	Persia

S. 2. Hesperhodos

minutifolia		14	Hurst 1928	H	Lr. Calif.
stellata		—		H	Texas

S. 3. Eurosa, A: Chromosomes completely pairable.

abyssinica		14	Hurst 1928	—	Abyssinia
acicularioides		14	Erlanson 1931a	—	N. America
adenosepala		14	" 1930	—	New Mexico
anacantha		14	" "	—	N.W.: U.S.A
anemoniflora		14	Hurst 1931	H	China
arizonica		14	Erlanson 1930	—	Ariz., New Mexico
arvensis	Ayrshire R.	14	Hurst 1931	H	Europe
banksiae	Banksia R.	14	" "	H	China
beggeriana		14	" "	H	Temp. Asia
bidenticulata		14	" "	—	California
blanda (subblanda)		14, 21	Erlanson 1931c	H	N. America
bracteata	Macartney R.	14	" 1929	H	S. China
brunonii	Himal. Musk R.	14	Hurst 1931	H	Him., W. China
cabulica		14	" "	—	Afghan.
cathayensis		14	Harrison, T. 1936	—	China?
chinensis	China & Bengal R.	14	Hurst 1931	H	China
cinnamomea	Cinnamon R.	14	" "	H	Eur., N. China
copelandii		14	Erlanson 1930	—	Calif.
coruscans (rugosa)		14	Harrison, T. 1936	—	Jap., Alaska
corymbulosa		14	Hurst 1931	—	China
davidi		14	Harrison T. 1936	—	"
davurica		14	" "	—	N. China
eastwoodii		14	Erlanson 1930	—	W. America

ROSA (*cont.*)

ecae		14	Hurst 1928	—	Asia
elegantula		14	" 1931	—	China
elymaitica		14	Täckholm 1922	—	Persia
fendleri		14	Hurst 1931	—	Calif.
foliolosa		14	Erlanson 1931a	—	France
gallica (*rubra*)	French R.	21, 28	Täckholm 1922	HPM	Eur., Cauc
gentiliana		14	Hurst 1928	H	China
gigantea		14	" "	—	India
giraldii		14	" 1931	H	China
granulifera		14	Erlanson 1930	H	Ariz., New Mexico
gratissima		14	" "	H	California
gymnocarpa		14	Harrison, T. 1936		N. America
helenae		14	" "	H	China
hypoleuca		14	Erlanson 1930	—	New Mex.
hugonis	Hugo R.	14	Hurst 1931	H	W. China
johnstonii		14	" "	—	Calif.
laevigata	Cherokee R.	14	Harrison, T. 1936	FsH	China, Jap
leschenaultiana		14	Hurst 1931	—	E. Indies
longicuspis		14	" "	—	China, Him
luciae		14	" 1928	—	Japan
lutea		14, 28	Harrison, T. 1936	—	Eur., S.W. Asia
macounii		14, 21	Erlanson 1933	H	N. America
macrophylla		14, 28	Hurst 1931	H	China, Him
marretii		14	" "	—	Sakhalin
michiganensis		14	Erlanson 1929	—	Michigan
microcarpa		14	Harrison, T. 1936	H	China
microphylla		14	Hurst 1931	H	"
mohavensis		14	Erlanson 1930	H	California
moschata	Musk R.	14	Hurst 1931	FsHP	Med. Pers.
multiflora		14	" "	HFs	Japan
neomexicana		14	Erlanson 1930	—	S.W. Ame
nipponensis		14	Hurst 1931	—	Japan
nitida		14	" "	H	N. America
omeiensis		14	" "	—	China
palustris	Swamp R.	14, 28	" "	H	N. America
persetosa		14	" "	—	China
phoenicia		14	" "	—	Sicily, Syri
pimpinellifolia	(*spinosissima*)	14, 28	Harrison, T. 1936	—	Britain
pyrifera		14+f, 28+f	Erlanson 1933	—	U.S.A.
pisocarpa		14, 21	" "	H	W:N. Ame
pissarti		14	Hurst 1928	—	Casp.
polyantha (*multiflora*)		14	Erlanson 1931a	Fs	China, Japa
pringlei		14	" 1930	—	W:N. Ame
pseudo-lucida (*baltica*)		14	Täckholm 1922	—	N. Europe
puberulenta		14	Erlanson 1929	—	W:N. Ame
rubens		14	Hurst 1931	—	—
rubus		14	Täckholm 1922	—	China

ROSA (*cont.*)

rugosa		14	Gustafsson & H. 1942	FsH	Jap., Alaska
salictorum		14	Erlanson 1930	—	Nevada
schutteana		14	" 1931a	—	N. America
sempervirens		14, 21, 28	Hurst 1928	H	Eur., India
sericea		14	Harrison, T. 1936	H	Himalayas
sertata		14	" "	H	China
setigera	Prairie Rose	14	" "	FsH	E: U.S.A.
soulieana		14	" "	—	China, Kor.
subserrulata (*serrulata*)		14, 28	Erlanson 1931a	—	U.S.A.
uchiyamana		14	Harrison, T. 1936	—	Japan?
ultramontana		14	Erlanson 1930	—	California
watsoniana		14	Hurst 1928	—	Japan
webbiana		14	Harrison, T. 1936	—	Himalayas
wichuraiana		14	" "	—	Japan
willmottiae		14	" "	—	China
woodsii		14	Erlanson 1933	—	N. America
xanthina		14	Hurst 1931	H	N. China, Kor.
alcea		28	Erlanson 1929	—	N. America
aldersonii		28	" 1933	—	California
arkansana		28	" "	H	W:N. Amer.
brachycarpa		28	" 1930	—	California
bushii		28	" 1929	—	Missouri
californica		28	" 1930	—	California
carolina (*lyonii*)	Pasture R.	28	" 1931a	H	E: U.S.A.
centifolia	Cabbage R., Moss R.	28	Hurst 1931	HP	Caucasus
deamii		28	Erlanson 1929		N. America
damascena	Damask R.	28, 35	Täckholm 1922	HP	S.W. Asia
durandii (*nutkana*)		28	Erlanson 1931b		W:N. Amer.
fedtschenkoana		28	Harrison, T. 1936	Vit	Turkestan
foetida	Austrian Briar	28	Hurst 1928	H	Asia
grandiflora		28	" 1931	Fs?	France
hawrana		28	" "		Hungary
hemisphaerica (*rapinii*)	Sulphur R.	28	" 1928	H	A. Minor
hispida		28	" "	H	Asia
hudsoniana (*carolina*)		28	" "	H	Eur., Asia
humilis (*carolina*)		28	Harrison, T. 1936	—	N. America
huntii		28	Hurst 1928	—	—
laxa		28	" 1931	FsH	Siberia
lutea		28	" 1928	H	Asia
multibracteata		28	Harrison, T. 1936	H	China
myriadenia		28	Erlanson 1931b	—	Oregon
obovata		28	" 1931a	—	England
ochroleuca		28	Hurst 1928	H	Siberia
pendulina (*alpina*)		28	Harrison, T. 1936	H	Alps, etc.
petiolata		28	Erlanson 1929	—	Missouri

ROSA (*cont.*)					
polyanthema		28	Erlanson 1931a	—	Dakota
ratonensis		28		—	N. America
relicta		28	,, ,,	—	,,
rotundata		28	,, 1930	—	Nevada
rudiuscula		28	,, 1931a	—	Missouri
santaecrucis		28	,, 1930	—	California
scotica		28	Hurst 1928	—	Scotland
setipoda		28	,, 1931	HVit	China
spinosissima (*altaica, lutescens, myriacantha, ripastii*)	Burnet Rose	28	,, ,,	H	Eur., A. Min., Iceland
subglauca		28	Erlanson 1929	—	N. America
suffulta		28	,, 1931a	—	,,
villosa		28	Täckholm 1922	—	Eur., Asia
virginiana		28, 42	Erlanson 1931a	H	E: U.S.A.
yainacensis		28	,, 1931b		N. America
acicularis		42, 56	Sakai 1935a	HVit	N. Asia, N. Americ
as *bourgeauiana*		42	Hurst 1928	Vit	
as *engelmanni*		42	Erlanson 1929	Vit	
butleri		42	,, ,,	Vit	B.C., Montana
hemsleyana		42	Hurst 1931	Vit	China
macdougali		42	,, ,,	Vit	N. America
manca		42	Erlanson 1930	Vit	,,
melina		42	,, ,,	HVit	,,
moyesii		42	Täckholm 1922	HVit	China
muriculata		42	Erlanson 1930	Vit	N:W. U.S.
nutkana		42	,, ,,	HVit	W:N. Ame
nuttalliana		42	Hurst 1931	HVit	N. Americ
sayi		42	,, ,,	Vit	,,
spaldingii		42	Erlanson 1930	Vit	,,
underwoodii		42	,, 1929	Vit	,,
sweginzowii		42	Hurst 1931	Vit	China
wilsonii (*involuta*)		42	,, 1928	Vit	Europe
baicalensis		56	Hurst 1931	Vit	C. Asia
tackholmii		56	,, 1928	Vit	Sweden

S. 3. B: Caninae, Dog Roses, with only 14 chromosomes paired (Täckhol 1922) (Subsexual or Apomictic)

mollis	28, 56	Harrison, T. 1936	H	Eur., W. A
sherardi, as *omissa*	35, 42	,, ,,	Vit	England
as *uncinata*	35	Harrison, T. 1936		
as *woodeana*	35	,, ,,		
pomifera	28	Hurst 1931	—	Gr., Cauc.
recondita (*pomifera*)	28	,, ,,	—	,, ,,
rubrifolia	28	Harrison, T. 1936	—	Caucasus

ROSA (*cont.*)					
agrestis		35	Hurst 1931	—	Eur., N. Afr.
cinerascens		35	Harrison, T. 1936	—	—
coriifolia (*subcoriifolia*)		35	” ”	HVit	Eur., Asia
dumetorum		35	” ”	Vit	Eur., As., N. Afr.
elliptica		35	” ”	—	Europe
froebellii		35	Hurst 1931	—	—
glauca		35	” ”	VitH	C. Eur.
glaucophylla		35	” ”	VitH	Europe
glutinosa		35	” 1928	H	Eur., A.Min.
hurstiana		35, 42	Harrison, T. 1936	—	Brit. Is.
micrantha		35	” ”	Vit	Eur., A.Min.
montana		35	” ”	—	Europe
orientalis		35	” ”	—	A. Minor, Persia
perthensis		35	” ”	—	—
pseudomollis		35	Hurst 1931	—	England
rubiginosa	Sweet Briar Eglantine	35	Gustafsson & H. 1942	FsHVit	Eur., Cauc.
seraphini		35	Harrison, T. 1936	—	Europe
sicula		35	” ”	—	—
stylosa		35	” ”	H	Europe
tomentella (*obtusifolia*)		35	” ”	Vit	—
tomentosa (*uriensis*)		35	Hurst 1931	HVit	Eur., A Min.
canina	Dog Rose	35	” ”	FsVit	Eur., Asia
as *pouzini*		42	Harrison, T. 1936		
as *blondaeana*		42	Gustafsson & H. ’42		Sweden
as *chavini*		42	Täckholm 1922		Alps
inodora		42	” ”	—	C. Europe
junzillii		42	” ”	—	C. & S. Eur.
POTENTILLA	*x*=7 (Many Species Apomictic)				
arguta		14	Popoff 1935	H	N. America
geoides		14	” ”	—	Taurus
glandulosa		14	J. Clausen *et al.* ’37	—	W:N. Amer.
rupestris		14	Popoff 1935	—	Eur., N. As.
heptaphylla		14	Rutishauser 1943	—	Europe
argentea		14, 28, 35, 42	Müntzing 1941	H	N. Temp.
alba		28	Popoff 1935	H	Eur., Cauc.
hirta		28	” ”	—	S. Eur., S.W. As.
multifida		28	” ”	—	Eur., N. As.
recta		28	” ”	H	” ”
splendens		28	” ”	H	France
tormentilla	Tormentil	28	” ”	M	Eur., N. As.
visianii		28	” ”	—	Balkans
alpestris		28, 42	S. & S. 1941	—	Alp., Arctic
anserina	Silver Weed	28, 42	Erlandsson 1942b	HM	N. & S. T.
egedii		28, 42	” ”	—	N. Arct. & Temp.

POTENTILLA (*cont.*)					
groenlandica		28, 35, 42	Erlandsson 1942b	—	N. Arctic
canescens etc.		42	Rutishauser 1943	—	Switzerland
tabernaemontani (*verna*)		42, 84	Müntzing 1941	—	N. Temp.
nepalensis etc.		42	Shimotomai 1930	H	Himalayas
collina		42, 70, 84	Müntzing 1931b	—	Eur., A.Min.
villosa		42, 49	,, ,,	—	C. Europe
palustris		42, 64	S. & S. 1941	—	Alp., Arctic
bifurca		56	Popoff 1935	—	Cauc., N.As.
curdica		56	,, ,,	—	—
argyrophylla		56, 63	,, ,,	H	Himalayas
atrosanguinea		56, 63	,, ,,	H	,,
gracilis		70, 84	,, ,,	—	W:N. Amer.
nivea		70	Sakai 1934	—	Arctic and Alpine
sibthorpiana		98	Shimotomai 1930	—	—
haemotochrus		112	,, ,,	—	Mexico
other species		—	Tischler 1929b	—	—
SIBBALDIA (POTENTILLA) *x*=7					
procumbens		14	Böcher 1938a	—	N. & S. Reg.
		14	S. & S. 1941		
GEUM *x*=7					
aleppicum (*strictum*)		42	R. Yamazaki 1936	H	N. Temp.
calthaefolium		42	,, ,,	H	Arct. Amer
coccineum		42	,, ,,	H	Chile
japonicum		42	,, ,,	H	Japan
rivale	Water Av.	42	Prywer 1932	—	N. Temp.
urbanum	Avens, Herb Bennet	42	,, ,,	—	,,
SANGUISORBA (POTERIUM) *x*=7					
hakusanensis		28	Sakai 1935a	—	Japan
minor	Salad Burnet	28	Lindenbein 1937	Sp	N. Temp.
officinalis	Great B.	28	Nakajima 1936	H	Eur., N.As N. Amer.
albiflora		54?	M. & S. 1936	—	Japan
NEURADA *x*=7					
procumbens		14	Hagerup 1932	—	N. Afr., Inc
FRAGARIA *x*=7					
bracteata		14	Yarnell 1931a	—	N. Americ
californica		14	Ichijima 1930	—	California
collina	Green Strawberry	14	,, ,,	—	Eur., N. A
maxima		14	,, ,,	—	—
mexicana		14	Yarnell 1931a	—	Mexico
nilgerrensis	Nilgiri S.	14	,, 1929	—	India
vesca	Wood S.	14	Ichijima 1926	—	Temp. Re
v. *americana*	Amer. S.	14	,, ,,	F	
viridis	Eur. S.	14	Darrow 1937	—	Eur., N.

FRAGARIA (*cont.*)

nipponica	Jap. S.	14 28	Lilienfeld 1936 Yamazaki 1936	F	Japan
elatior (*moschata*)	Hautbois S.	42	Ichijima 1926	F	Europe
chiloensis	Pine S.	56	,, ,,	F	N. America
cuneifolia	Rocky Mt. Wild S.	56	,, ,,	F	W:N. Amer.
glauca		56	,, 1930	F	N. America
grandiflora	Garden S.	56	,, 1926	F	*cult*
platypetala		56	Yarnell 1931a		N. America
virginiana	Scarlet S.	56	Ichijima 1926	F	,,

DUCHNESNEA (FRAGARIA) $x=7$

indica	Mock S.	84	Ichijima 1926	H	Ind., China, Malaya

RUBUS $x=7$ (Polyploids often Apomictic)

allegheniensis	Black Longberry	14	Longley 1924a	F	E:N. Amer.
arcticus	Arctic Bramble	14	Vaarama 1939	F	Arctic
argutus	Amer. Wild Bl.	14	Longley 1924a	F	E:N. Amer.
bollei		14	Gustafsson 1943	—	Europe
canadensis	Thornless Mt. B.	14	Longley 1924a	F	N. America
illecebrosus	Strawberry R.	14	,, ,,	F	Japan
incanescens		14	Gustafsson 1943	—	Europe
kuntzeanus	Chinese R.	14	Darrow 1937	F	Asia
lasiostylus		14	Longley & D. 1924	F	China
laudatus	Kinoyer B.	14	Yarnell 1931c	F	N. America
leucodermis	White bark R.	14	Darrow & L. 1933	F	W:N. Amer.
moschus		14	Gustafsson 1943	—	Europe
neglectus	Purple Cane R.	14	Crane & D. 1927	F	N. America
occidentalis	Amer. Black R.	14	Longley 1924a	F	,,
odoratus	Flowering R.	14	,, ,,	H	E:N. Amer.
parviflorus	Australian Br.	14	Darrow & L. 1933	F	Mal., China, Austr.
phoenicolaisus	Wineberry	14	Crane & D. 1927	F	Japan
rubrisetus		14	Yarnell 1931c	—	Hungary
strigosus	Amer. Red R.	14	Longley & D. 1924	F	N. America
rusticanus (*ulmifolius*)		14	Crane & D. 1927	F	Europe
spectabilis	Salmonberry	14	Darrow & L. 1933	F	W:N. Amer.
tomentosus		14	Gustafsson 1933	F	Europe
trivialis	Lowbush R.	14	Yarnell 1936	F	W:N. Amer.
xanthocarpus		14	Gustafsson 1933	F	China
villosus	North. Dewberry	14	Longley 1924a	F	E:N. Amer.
idaeus	European Raspberry	14, 21, 28	Crane 1936	F	Eur., N. & S.W. Asia
deliciosus	Rocky Mt. R.	21	Longley 1924a	H	W:N. Amer
nigricans		21	,, ,,	F	,,

RUBUS (*cont.*)

candicans		21	Gustafsson 1939	F	Europe
subvelutinus		21	„ „	—	„
thyrsiflorus		21	„ „	H	„
nitidus		21	„ 1942	H	„
acuminatus		28	„ 1933	H	Europe
affinis		28	„ „	F	Himalayas
arrheni		28	„ „	—	Europe
armeniacus		28	„ 1942	F	„
bloxamii		28	Datta 1932	F	„
caesius	Eur. Dewberry	28	„ „	F	Eur., N. As.
calvatus		28	Crane 1936	H	Europe
cardiophyllus		28	Harrison, M. 1939	H	„
dasyphyllus		28	Gustafsson 1939	F	„
fioniae		28	„ „	—	N. Europe
fissus		28	„ „	H	Europe
gothicus		28	„ „	—	Denmark
hirtus		28	„ 1942	F	Europe
imbricatus		28	Datta 1932	F	„
incurvatus		28	„ „	F	„
insularis		28	Gustafsson 1933	H	Europe
kaltenbachii		28	„ „	H	„
laciniatus	Evergreen Bl.	28	Crane 1936a	F	„
lentiginosus		28	Maude 1939	F	„
nemorosus	Caucasian D.	28	Gustafsson 1933	F	„
nessenses		28	„ 1939	F	„
nitidus opacus		28	Datta 1932	—	„
niveus		28	Crane & D. 1927	F	W. U.S.A.
pallidus		28	Gustafsson 1933	F	Europe
plicatus		28	„ „	F	„
polyanthemus		28	„ 1942	F	„
procerus	Himalaya Berry	28	Crane 1936	F	„
sachalinensis	Sib. R.	28	Rozanova 1939	F	N. Asia
salteri		28	Maude 1939	F	Europe
saxatilis	Roebuck Berry	28	Vaarama 1939	F	N. Temp.
schlechtendahlii		28	Crane 1936	F	Europe
selmeri		28	Gustafsson 1939	F	„
sprengelii		28	Datta 1932	F	„
thyrsiger		28	Crane & D. 1927	F	„
vestitus		28	Gustafsson 1942	F	„
idaeus × *caesius*		28, 35, 42	Rozanova 1940a	F	*expt.*
bellardii		35	„ 1939	—	Eur.—Pers.
kollundicola		35	„ „	—	Europe
corylifolius		35	Datta 1932	F	„
borreri (and 18 other spp.)		28	Fabergé, M. 1939	F	„
		42	Crane 1936		
nitidioides	Merton Early Bl.	28	„ „	F	England
		42	Harrison, M. 1939		
vestervicensis		35	Gustafsson 1939	F	Europe

RUBUS (*cont.*)					
ciliatus (*corylifolius*)		42	Gustafsson 1933	F	Europe
divergens		42	,, ,,	F	,,
loganobaccus	Loganberry	42	Thomas 1940	F	*cult*
nitens		42	Gustafsson 1933	F	Caucasus
tiliaceus (*tiliaefolius*)		42	,, ,,	—	Europe
hispidus	Swamp Bl.	35	Longley 1924	F	N. America
		56	,, ,,		
chamaemorus	Cloudberry	56	,, 1927a	F	Arctic
ursinus	Pacific D.	42, 56, 84	Gustafsson 1943	F	—
v. *pentaphyllum*		42, 84, etc.	S.W. Brown 1943	F	N. Calif.
v. *medusae*		56, 84 etc.	,, ,,	F	,,
v. *macropetalus*		56, 84 etc.	,, ,,	F	,,
v. *typicus*		56 etc.	,, ,,	F	Cal. Or.
v. *monophyllum*		56, 63, 70, 77	,, ,,	F	C. Cal.
as *vitifolius*		84	Crane & L. 1938	F	
lemurum		84	S. W. Brown 1943	F	C. Calif.
baileyanus	Dewberry	—		F	N. America
biflorus	Chinese R.	—		F	Him., India
coreanus	Korean R.	—		F	China, Kor.
cuneifolius	Sand B.	—		F	N. America
ellipticus	Golden Evergreen R.	—		F	India
glaucus	Andes Black R.	—		F	Chile, Peru
lasiocarpus	Mysore R.	—		F	India
parvifolius	Asiatic Trail. R. Australian Br.	—		F	Mal., Austr., China
rosaefolius	Mauritius R.	—		F	Trop. Asia
other species		—	Gustafsson 1943	F	Europe
AGRIMONIA $x=7$					
eupatoria	Agrimony	28	Maude 1940	M	Europe
odorata		56	Wulff 1939	—	Eur., W. As., N. Afr.
HAGENIA					
abyssinica		—		M	Abyssinia
APHANES (ALCHEMILLA) $x=8$					
microcarpa		16	Gudjonsson 1941	—	Spain
arvensis	Parsley Piert	48, 50	Gentscheff & G. 1940	—	N. Temp.
ALCHEMILLA $x=8$ (All Species Apomictic)					
acutiloba (*vulgaris*)		32	L. & L. 1942	—	Europe
glomerulans		*c.* 64	Böcher 1938a	—	,,
glabra (*vulgaris*)		*c.* 90	L. & L. 1942	—	,,
vulgaris s.s.	Lady's Mantle	91-191	Gentscheff & G. 1940	H	Eur., Asia
alpina		*c.* 120	,, ,,	—	Alps, etc
EXOCHORDA $x=8$					
giraldii	Pearl Bush	16	Sax 1931a	H	China

MADDENIA *x*=8					
hypoxantha	Madden Cherry	32	Sax 1931a	H	China
NUTTALLIA (OSMARONIA) *x*=8					
cerasiformis	Osoberry	16	Moffett 1931b	H	W:N. Amer.
PRINSEPIA *x*=8					
uniflora		32	Sax 1931a	H	Mongolia
FILIPENDULA (SPIRAEA) *x*=7, 8					
ulmaria	Meadowsweet	14	Wulff 1938	HM	Eur., N. Asia
		16	Turesson 1938		
vulgaris	Dropwort	14	Wulff 1938	RM	„ „
		15	Maude 1940		
SIBIRAEA (SPIRAEA) *x*=9					
laevigata		18	Sax 1931a	H	Siberia
SPIRAEA *x*=9					
cana		18	Sax 1936	—	S. Europe
gemmata		18	„ „	—	China
japonica		18	„ „	H	China, Jap., Him.,
nipponica		18	„ „	—	Siberia
corymbosa		27	„ „	—	N. America
alba	White M.	36	„ „	—	N. Tropics
latifolia	Meadowsweet	36	„ „	M	„
salicifolia		36	„ „	H	Eur., Japan
myrtiloides		54	„ „	—	China
DRYAS *x*=9					
octopetala		18	Maude 1940	BH	North Reg.
caucasica		18	S. & S. 1940	—	Cauc.
KERRIA *x*=9					
japonica		18	Sugiura 1936b	H	Japan
PENTACTINA *x*=9					
rupicola		18	Sax 1931a	—	Korea
PHYSOCARPUS (SPIRAEA) *x*=9					
capitatus	Ninebark	18	Sax 1931a	H	W:N. Amer.
intermedius	„	18	„ „	H	C:N. Amer.
monogynus	„	18	„ „	H	W:N. Amer.
stellatus	„	18	„ „	—	N. America
RHODOTYPOS *x*=9					
scandens	Jet Bead	18	Sax 1932	H	Japan
PRUNUS *x*=8					
S. 1. Almonds and Peaches					
amygdalus	Almond	16	Darlington 1930	HNO	S.W. Asia
fenzliana		16	„ „	H	Caucasus
persica	Peach, Nectarine	16	„ „	FHO	W. China (*cult*)

PRUNUS (*cont.*)

nana (*tenella*)	Russian A.	16	Kobel 1928	HN	Eur., Sib.
triloba	Flowering A.	64	„ „	H	China
davidiana		—		F	„

S. 2. Plums

alleghaniensis	Allegeny P.	16	Sax 1931a	F	N.E: U.S.A.
americana	Goose P.	16	„ „	F	„
armeniaca	Apricot	16	Darlington 1928	F	Caucasus
hortulana		16	Sax 1931a	F	C: U.S.A.
maritima	Bead P.	16	„ „	F	E: U.S.A.
nigra	Canada P.	16	Kobel 1928	F	„ „
triflora	Jap. P.	16	Darlington 1930	F	China
as *salicina*		16	Weeks 1941		
mume	Jap. Apricot	16, 24	Okabe 1928	F	Japan
divaricata (*cerasifera*)	Myrobalan, Cherry P.	16, 17, 24	Rybin 1936	FFs	Caucasus
capsica		16	Kovalev 1939	F	Persia
iranica		16	„ „	F	„
media		32	„ „	F	„
spinosa	Sloe, Blackthorn	32	Darlington 1930	F	Eur., N. Afr., W. As.
nat. hybrids		16, 24, 40, 48	Mather 1937		
insititia	Damson	48	Darlington 1928	FFs	Eur., A.Min.
as *italica*		48	Kobel 1927		—
domestica	European P.	48	Darlington 1930	F	*cult*
divaricata × *spinosa*		24, 48	Rybin 1936	F	Caucasus

S. 3. Cherries

cerasoides (*puddum*)		16	Okabe 1928	F	Japan
crassipes		16	„ „	F	„
glandulosa	Almond C.	16	Sax 1931a		W:N. Amer.
incana	Underwood C.	16	„ „	F	Caucasus
japonica		16	„ „	F	Jap., China
kurilensis	Takane C.	16	Okabe 1929		Japan
lannesiana	Jap. Flower. C.	16	Darlington 1930	H	„
mahaleb	Mahaleb C.	16	„ 1928	Fs	S. Eur., S.W. Asia
mutabilis	Jap. Flower. C.	16	Okabe 1928	F	Japan
pumila	Sand C.	16	Kobel 1928	F	N: U.S.A.
sachalinensis	Sargent C.	16	Okabe 1928	F	Japan
subhirtella	Higan C.	16	„ „	H	„
tomentosa	Manchu C.	16	„ „	F	E. Asia
yedoensis	Yoshino C.	16	„ „		Japan
incisa	Fuji C.	16	Sax 1931a	F	„
as *itosakura*		16, 24	Okabe 1928		
paniculata (*serrulata*)	Jap. Fl. C.	16, 24	„ „	FHP	Japan
as *pseudocerasus*	Yung fo	32	„ „		
avium	Sweet C., Mazzard	16, 24, 32	Darlington 1928, 1933b	FHTo	Eur., S.W. Asia

PRUNUS (*cont.*)

cerasus	Sour C., Morello	32	Darlington 1928	F	Eur., S.W. Asia
cantabrigiensis	Chin. Early C.	32	Crane & L. 1938	F	China
fruticosa	Ground C.	32	Darlington 1928	F	S. Eur., N. Asia

S. 4. Bird Cherries

grayana	Jap. Choke C.	32	Okabe 1928	F	Japan
padus	Bird C., Hagberry	32	Kobel 1928	HF	Eur., N. Am.
serotina	Rum C., Wild Black C. Capuli	32	,, 1927	FMW	N. America
ssiori	Sakhalin C.	32	Okabe 1928	F	Sakhalin
virginiana	Amer. Choke C.	32	Sax 1931a	F	N. America

S. 5. Cherry Laurels

laurocerasus	Cherry L.	*c.* 176	Meurman 1929	HMSp	S.W. Asia
caroliniana	Amer. C. L.	—		H	S.E: U.S.A.
lusitanica	Portugal L.	—		H	Portugal

II. Secondary Group: POMOIDEAE $x=17$
(following Moffett 1931a)

CRATAEGUS

sanguinea	Red Hawthorn	34	Longley 1924b	F	Rus., Sib.
lavallei		34	Sax 1931a	—	N. America
tomentosa	Pear Thorn	34	Longley 1924b	F	E: U.S.A.
douglasii	Michigan H.	51	,, ,,	F	Michigan, W:N. Am.
intricata	Thicket H.	51	,, ,,	F	E: U.S.A.
oxyacantha	Hawthorn	34	Moffett 1931a	BFsW	Eur., Temp. Asia
monogyna		34	,, ,,	—	,, ,,
v. *cabulica*		51	,, ,,		
crus-galli (*rotundifolia*)	Cockspur H.	68	,, ,,	—	N. America
cordata	Washington H.	(72)	,, ,,	—	,,
apposita	Delaware H.	68	,, ,,	—	N. America
cognata		68	,, ,,	—	,,
pedicellata	Ontario H.	68	,, ,,	—	,,
pruinosa	Frosted H.	68	,, ,,	—	E: U.S.A.
azarolus	Azarole	—		F	A. Min., Persia
flava		—		F	N. America
orientalis		—		F	Gr., A. Min.

CHAENOMELES (CYDONIA, PYRUS) $x=17$

japonica		34	Moffett 1931a	H	Japan
lagenaria	Jap. Quince	34	,, ,,	F	,,
sinensis	Chinese Quince	34	Sax 1931a	F	China

CYDONIA $x=17$

oblonga (*vulgaris*)	Quince	34	Moffett 1931a	FFsM	Turkest., N. Pers. (*cult*)

ERIOBOTRYA $x=17$					
japonica	Loquat	34	Morinaga & F. 1929	F	Jap., China
MESPILUS $x=17$					
germanica	Medlar	34	Moffett 1931a	F	E. Eur., S.W. Asia
RAPHIOLEPIS $x=17$					
delacrourii		34	Moffett 1931b	H	*cult*
indica	Indian H.	34	„ „	FM	China
umbellata	Yeddo R.	34	„ „		Japan
STRANVAESIA $x=17$					
davidiana		34	Moffett 1931a	H	China
AMELANCHIER $x=17$					
asiatica	Asiatic S.	34	Sax 1931a	F	N. Amer., E. Asia
humilis	Low S.	34	„ „	F	N. America
oblongifolia	June Berry	34	„ „	H	N. Amer., E. Asia
sanguinea		34	„ „	—	E. Asia
stolonifera		34	„ „	—	N. America
		68	Moffett 1931a		
canadensis	Shad	68	„ „	FH	N. Amer., E. Asia
rotundifolia	Service Berry	68	„ „	F	„ „
ARONIA $x=17$					
hybrida		34	Moffett 1931a	H	*cult*
melanocarpa	Black Chokeberry	34	„ „	—	E. N. Amer.
arbutifolia	Red C.	34	Sax 1931a	H	„
		68	Moffett 1931a		
PHOTINIA $x=17$					
glabra	Jap. Medlar	34	K. 1931	H	Japan
villosa		68	Moffett 1931a	H	„
MALUS $x=17$					
adstringens	Crab apple	34	Sax 1931a	F	*cult*
asiatica	Oriental C.	34	Kobel 1927	F	N. Asia
baccata	Siberian C.	34	Sax 1931a	F	Himal., N. Asia
floribunda	Flowering C.	34	Darlington & M. 1930	F	China
fusca	Oregon C.	34	Nebel 1929		N. America
halliana		34	„ „	F	W. China
ioensis	Prairie C.	34	„ „	F	N. America
niedzwetzkyana		34	„ „	F	S.W. Sib., Cauc.
zumi	Zumi Crab	34	Rybin 1926	F	Japan
prunifolia	Plum Leaf C.	34, 51	Nebel 1929	F	N. America

MALUS (*cont.*)					
pumila	Apple	34	Kobel 1927	F	Afgh., *cult*
(*sylvestris*)		34, 51	Darlington & M. 1930		
theifera		51	Sax 1932	F	China
angustifolia	Southern C.	34	Rybin 1926	F	N. America
		68	Sax 1931a		
coronaria	American C.	68	„ „	F	N. America
hupensis		51, 68	Dermen 1936c	F	„
sargenti		34, 68	Nebel 1930	F	Japan
glaucescens		68	Sax 1931a	F	N. America
PYRUS $x=17$					
aromatica		34	Adati 1933	F	Japan
betulifolia		34	„ „	FV	China
calleryana	Callery P.	34	„ „	F	Japan
dimorphophylla		34	„ „	F	„
elaeagrifolia	Oleaster P.	34	Rybin 1927	F	Asia Minor
fauricei	Korean P.	34	Adati 1933	F	E. Asia
hondoensis		34	„ „	F	Japan
nivalis	Snow P.	34	Rybin 1927	F	N. As., Him.
phaeocarpa		34	Adati 1933		China
pyrifolia (*serotina*)	Sand P.	34	„ 1935	F	Java
salicifolia		34	Kobel 1927	F	Caucasus
sohayakiensis		34	Adati 1933	F	Japan
ussuriensis (*sinensis*)	Chinese P.	34	Rybin 1927	F	China
uyematsuana		34	Adati 1933	F	*cult*
communis	Pear	34, 51	Darlington & M. 1930	F	Afgh., *cult*
		68	Crane & T. 1937		
pashia	Ind. Wild P.	—		F	Himalayas
SORBUS (PYRUS) $x=17$					
alnifolia		34	Sax 1931a	—	Japan
americana	Amer. M. A.	34	„ „	—	N. America
aria	Chess Apple, White Beam	34	Moffett 1931a	F	Eur., N. As.
aucuparia	Rowan, Mountain Ash	34	„ „	BF	Eur., N. As.
		34	Sax 1931a		
domestica	Service Tree	34	Moffett 1931a	W	Eur., N. Af.
torminalis	Wild Service T.	34	„ 1931a	F	S. & C. Eur.
lancifolia		51	Liljefors 1934	—	Europe
minima		51	Moffett 1931b	—	Europe?
mougeotti		51	Liljefors 1934	—	Europe
chamaemespilus		68	„ „	—	„
fennica		68	„ „	—	N. Europe
intermedia (*suecica*)		68	„ „	—	—
meinichii		68	„ „	—	*cult*
obtusifolia (*aria* v. *norvegica*)		68	„ „	—	Eur., N. As.
sudetica		68	„ „	—	Sweden

CHRYSOBALANUS					
icaco	Coco Plum	—		FO	Trop. Amer. W. Tr. Afr.
HIRTELLA					
americana	Kauta Bark T.	—		M	Br. Guiana
MOQUILEA					
utilis	Pottery T.	—		To	Brazil
QUILLAJA					
saponaria	Quillaia	—		M	Chile, Braz.

145. CALYCANTHACEAE

CHIMONANTHUS $x=11$					
fragrans	Jap. Allspice, Winter Sweet	22	Sugiura 1931	HSp	Japan
CALYCANTHUS $x=11$					
fertilis	Pale Sweet Shrub	22	Sax 1933b	HSp	N. America
floridus	Carolina Allspice	22	,, ,,	HSp	,,
v. *ovatus*		33	,, ,,	HSp	,,
occidentalis	Calif. Allspice	—		HSp	California

146. CAESALPINACEAE

AMHERSTIA $x=6$					
nobilis	Tree of Heaven	24	Pantulu 1943	H	Burma
BROWNEA $x=6$					
coccinea (hybrida)		24	Pantulu 1943	HM	S. America
CAESALPINIA $x=6$					
pulcherrima	Peacock Flower	24 24	Senn 1938, Jacob 1940	HM	Tropics
crista (bonducella)	Nickar Bean	24	Pantulu 1942	DM	,,
brevifolia	Algorobilla	—		D	Tr. S. Am.
coriaria	Divi-divi	—		HDW	Dry Tr. Am.
digyna	Teri-pod. T.	—		D	India, Mal.
echinata	Brazilian T.	—		D	Brazil
sappan	Sappan Wood	—		D	India, Mal.
sepiaria	Mysore Thorn	—		D	India
spinosa	Tara	—		D	Chile
HAEMATOXYLON $x=6$					
campechianum	Logwood	24	Revell unp.	DW	Trop. Amer.
brasiletto	Brazilette	—		D	,, ,,
SARACA $x=6$					
indica	Ashoka	24	Pantulu 1943	DHM	Ind., Bur., Ceylon
declinata		—		H	Sumatra

TAMARINDUS $x=6$					
indica	Tamarind	24	Paul 1937	FMW	Trop. As. & Afr.
CERCIS $x=6, 7$					
canadensis	Red Bud	12	Senn 1938	H(V)	E:N. Amer.
siliquastrum	Judas Tree	14	Corti 1930b	H(V)	S. Eur.—N. Pers.
CASSIA $x=6, 7, 8$ $x_2=13$ (6+7)					
auriculata	Avarum	14, 16	Jacob 1940	DM	India
		28	Pantulu 1942		
alata	Ringworm Pl.	24	Senn 1938	M	Tropics
fistula	Ind. Laburnum	24	Tischler 1922	DHM	Trop. Asia
sophera		24	Kawakami 1930	H	O.W. Trops.
tomentosa		24	Sugiura 1931	Ma	Trop. Amer.
obtusifolia		26	Pantulu 1942	Ma(V)	Tropics
tora	Tavara	26	Datta 1933b	DMa(V)	—
		28	Jacob 1940		
occidentalis	Nigger Coffee	26	Muto 1929	BMa	Tropics
		28	Pantulu 1940		
didymobotrya		28	Sethi 1930	HMaSt	Abyss.
floribunda (*corymbosa*)		28	Jacob 1940	H	Temp. Am.
grandis	Pink Shower	28	,, ,,	HM	Panama
marginata	Red Cassia	28	Pantulu 1942	DShW	Trop. Asia
siamea	Kassod Tree	28	,, ,,	DShVW	Mal., E.Ind.
torosa		28	Nakajima 1936	Ma	Tropics
glauca		28, 56	Pantulu 1942	H	Tr. As., Austr.
dimidiata		16	Sugiura 1931	—	Tropics
mimosoides (*leschenaultiana*)		16, 32, 48	Kawakami 1930	BMa	,,
absus	Chaksu	—		M	O.W. Trop.
acutifolia	Alexandrian S.	—		M	Sudan
angustifolia	Indian Senna	—		M	Ind., Afr., Ar.
javanica	Java Cassia	—		HShM	E. Indies
laevigata		—		MaV	Trop. Amer.
nodosa		—		ShMW	S. China
renigera		—		H	Upper Bur.
BAUHINIA $x=7$					
acuminata		28	Pantulu 1942	HM	Ind., China, Mal.
purpurea		28	,, ,,	DH(V)	Ind., China, Bur.
racemosa		—		D	Ind., Mal., China
vahlii		—		T	India
variegata	Mountain Ebony	—		DHT(V)	India, China

PARKINSONIA $x=7$					
aculeata	Jerusalem Thorn	28	Pantulu 1942	H	Trop. Amer.
DELONIX (POINCIANA) $x=7$					
regia	Flamboyante	28	Jacob 1940	HShW	Madagascar
CERATONIA					
siliqua	Carob, Locust Bean	—		DFFo Sh	S. Eur., S.W. Asia
COPAIFERA					
demeusii	Congo Copal	—		Re	Congo
gorskiana	Inhambane C.	—		Re	S.E. Africa
guibourtiana	Sierra Leone C.	—		Re	W. Africa
langsdorfii	Para Copaiba-B.	—		Re	Brazil
mopane	Congo Copal	—		Re	W. Africa
officinalis	Maracaibo Copaiba-B.	—		ReW	Trop. S. Am.
CYNOMETRA					
cauliflora	Nam Nam	—		FHM(V)	India, Mal.
DETARIUM					
senegalense	Dattock	—		FW	Trop. Afr.
HARDWICKIA					
binata	Anjan	—		TW	India
pinnata	Sampirani	—		ReW	,,
PELTOPHORUM					
ferrugineum (inerme)		—		HShW	Cey., Mal., N. Austr.
linnaei	Brasilette T.	—		DW	Brazil
TRACHYLOBIUM					
verrucosum	Zanzibar Copal	—		Re	Trop. Afr.

147. MIMOSACEAE

MIMOSA $x=12$					
pudica		48	Kawakami 1930	HM	Tropics
rubricaulis		—		W	Himalayas
ALBIZZIA $x=12, 13$					
lophantha	Plum Acacia	24	Sugiura 1931	FoSh	Australia
julibrissin		26	Senn 1938	(B)HSh	Sub. Tr. As., Afr.
		52	R. Yamazaki 1936		
amara		—		(B)FoW	O.W. Trops.
lebbek	Lebbek	—		FoShW	Tropics
ACACIA $x=13$					
baileyana	Cootamundra W.	26	Newman 1934	W	N.S. Wales
cyanophylla	Blue-leaf A.	26	Ghimpu 1930	W	Australia
dealbata	Silver Wattle	26	,, ,,	DW	,,
decurrens	Green Wattle	26	,, ,,	DW	,,

ACACIA (*cont.*)					
dermatophylla		26	Corti 1931b		Australia
mollissima	Black W.	26	Thomas unp.	D	„
longifolia	Sydney Golden W.	26	Ghimpu 1930	HW	„
podalyrifolia	Pearl Acacia	26	„ „	W	Austr., Pac.
saligna	Willow Acacia	26	„ „	HW	Australia
arabica (*nilotica*)	Babul, Gum Arabic	*c.* 52	„ „	DMW	Trop. Afr., Asia
as *scorpioides*		52	„ „		
eburnea	Ivory A.	52	„ „	W	India
farnesiana	Cassi	52	„ „	DPW	Trop. & Sub. Trop.
horrida	Allthorn	*c.* 52	„ „	WD	S. Africa
cathechu	Catechu	—		DMW	India
melanoxylon	Austr. Blackwood	—		HW	Australia
pycnantha	Golden Wattle	—		HD	„
senegal	Gum Arabic	—		M	Trop. Afr.
ADANANTHERA					
pavonina	Bead T. Manjadi	—		ShDM W	Trop. Afr.
ENTADA					
gigas (*scandens*)	Sea Bean	—		FoO(V) M	O.W. Trop.
spiralis	Malacca B.	—		FoO(V) M	Malaya
LEUCAENA					
glauca		—		BDFo MaVW	Trop. Amer.
PITHECOLOBIUM					
dulce	Madras Thorn	—		HFoD	Trop. Amer.
saman	Rain Tree	—		FoSh	„ „
PROSOPIS					
chilensis	Algaroba	—		Re	S. America
juliflora	Mesquite	—		AFo$_1$Re	Sub. Trop. America
XYLIA					
dolabriformis	Burma Ironwood	—		DW	India, Bur.

148. PAPILIONACEAE

Order of the Tribes with their Basic Numbers

I Vicieae: 5, 6, 7, 8
II Galegeae: 6, 7, 8, 10
III Loteae: 6, 7, 8
IV Trifolieae: 7, 8, 9
V Hedysareae: 7, 8, 9, 10, 11, 12
VI Phaseoleae: 8, 10, 11, 12
VII Genisteae: 7, 8, 9, 10, 12
VIII Sophoreae: 7, 8, 9
IX Podalyrieae: 9
X Dalbergieae: 10, 11

TRIBE I: VICIEAE

VICIA $x=5, 6, 7$

$x=5, 6$					
amphicarpa		10	Sweschnikova 1930, 1940	—	Eur., W. A N. Afr.
		12	Coutinho 1940	—	
lathyroides		10	Sweschnikova 1927a	—	Eur., A.Min. N. Afr.
		12	Heitz 1931b		
macrocarpa		10	„ „	—	S. Europe
		12	Coutinho 1940		
$x=6$					
angustifolia	Narrowleaf V.	12	Sweschnikova 1927a	Fo	Eur., N. Afr. W. Asia
hybrida		12	Heitz 1931b	—	Eur., Med.
hyrcanica		12	„ „	—	Caucasus
lathyroides	Spring Vetch	12	„ „	—	Eur., Med.
orobus	Upright V.	12	„ „	—	Europe
pannonica	Hungarian V.	12	„ „	Fo	S. Eur., As.
peregrina		12	„ „	—	Med., Ind.
pisiformis	Pea Vetch	12	„ „	V	Europe
unijuga	Pair Vetch	12	„ „	—	E. Asia
		24	Sakamura, I. 1916		
		36	Kawakami 1930		
tenuifolia	Marrachero	24	Heitz 1931b	FoV	Eur., S.W. & N. Asia
amoena		24	Sweschnikova 1927a	—	Siberia
$x=6, 7$					
faba	Broad, Horse or Field Bean	12	Mather 1934	VFo	Medit., *cult*
		14	Kotliarewskaja 1931		
		(24)	Rybin 1939		
sativa	Common V. or Tare	12	Sweschnikova 1940	GFo	Eur., N.Afr.
		14	Kawakami 1930		W. Asia
cracca	Cow Vetch	12, 14, 28	Sweschnikova 1927b	FoG	Eur., W.As., N. Amer.
$x=7$					
articulata (monantha)		14	Heitz 1931b	MaFo	Medit.
atropurpurea	Purple Vetch	14	„ „	FoMa	Algeria
aurantia		14	„ „	—	Asia Minor
bithynica		14	„ „	—	Medit.
calcarata		14	„ „	—	Med., Persia
cassubica		14	Wulff 1939b	—	Europe
dasycarpa	Woolly Pod V.	14	Sweschnikova 1927a	Fo	„
disperma		14	Heitz 1931*b*	—	S. France
dumetorum	German Vetch	14	„ „	—	Eur., Sib.
erviformis		14	„ „	—	W. Medit.
ervilla	Bitter Vetch	14	„ „	FoV	Eur., N.Afr.,
				—	A. Minor.
gracilis		14	Sweschnikova 1927a	—	Eur., Syria
grandiflora		14	Heitz 1931b	—	S. Eur., A. Minor

11

VICIA (*cont.*)					
hirsuta	Hairy Tare	14	Heitz 1931b	FoV	Eur., N.Afr., Asia
lutea	Yellow Vetch	14	„ „	— —	Med., Pers., A. Minor
monantha	Bard Vetch	14	„ „	FoG	Medit.
musquinez		14	„ „	—	Europe
narbonensis	French Vetch	14	„ „	FoV	Med., W.As.
picta		14	Sweschnikova 1927a	—	Armenia
pseudo-orobus		14	Heitz 1931b	—	N. China
pseudo-cracca		14	Sweschnikova 1927a	—	Italy
pyrenaica	Pyrenees V.	14	Heitz 1931b		Pyrenees
sepium	Bush Vetch	14	„ „	V	Eur., N.As., Him.
serratifolia		14	Senjaninova 1932	—	Med., S.W. Asia
sicula		14	Heitz 1931	—	Sicily
sylvatica	Wood Vetch	14	Sweschnikova 1927a	—	Europe
tetrasperma	Sparrow V.	14	„ „	—	Eur., Med.
varia		14	Senn 1938	—	Eur., W. As., N. Afr.
villosa	Russian V.	14	„ „	VFo	Russia
alpestris		28	Heitz 1931b	—	Cauc., A. Minor
LENS $x=7$					
esculenta	Lentil	14	Heitz, T. 1927	G	Med., W.As., *cult*
v. *microsperma*		14	Miranda 1931, E.K.J.		
v. *macrosperma*		14	„ „ „		
PISUM $x=7$					
abyssinicum		14	Fedotov 1935	VG	Abyss.
elatius		14	„ „	VG	Med., S.W. Asia
fulvum		14	„ „	—	A. Min., Syr.
sativum	Garden Pea	14	Sansome 1933	FoVG	*cult*, S.W. As.
		14	Winge 1925		
as *arvensis*	Field Pea	14	Lutkov 1930		
as *humile*		14	Sutton 1935		
LATHYRUS $x=7$					
angulatus		14	Simonet 1932c	—	Europe
annuus		14	„ „	—	Med., S.W. As.
aphaca	Yellow Vetchling	14	„ „	G	Med., W.As.
articulatus		14	Senn 1938	—	W. Medit.
cicera	Lesser Chick P., Flat-Podded V.	14	„ „	G	Eur., S.W. Asia
cirrhosus		14	„ „	—	Pyrenees
clymenum		14	„ „	—	Medit.
grandiflorus	Everlasting P.	14	„ „	H	Italy, Gr.

LATHYRUS (*cont.*)

ensifolius		14	Senn 1938	—	Europe
heterophyllus		14	„ „	—	„
hirsutus	Winter Vetch	14	„ „	Fo	Eur., S.W. Asia
latifolius	Perennial P.	14	„ „	H	Europe
magellanicus	Cape Horn P.	14	„ „	G	Magellan
montanus	Heath P.	14	Scheerer 1940	—	S:S. Amer.
maritimus (*japonicus*)	Sea Pea	14	Kawakami 1930	G	Eur., N. As.
niger	Black Vetchling	14	Corti 1931b	—	Europe
nissolia	Grass Vetchling	14	Simonet 1932c	—	Eur., S.W. Asia
numidicus		14	„ „	—	Algeria
ochrus		14	„ „	FoRG	Medit.
palustris	Marsh Pea	14	Senn 1938	—	N. Hem.
pannonicus		14	Melderis & V. 1931	—	S. Eur., A. Minor
pratensis		14	„ „	Fo	Europe
pubescens		14	Simonet 1932c	—	Chile
rotundifolius		14	„ „	—	E. Eur., S.W. Asia
sativus	Grass Pea	14	Roy 1936	FoG	N. Afr., W. Asia
sessilifolius		14	Senn 1938	—	C:S. Amer.
sylvestris	Flat Pea	14	Simonet 1932c	—	Europe
sphaericus		14	„ „	—	S. Europe
tingitanus	Tangier P.	14	„ „	Fo	W. Medit.
tuberosus	Earthnut P., Dutch Mice	14	Fisk 1931	R	Eur., Asia
vernus	Spring Bitter V.	14	Melderis & V. 1931	—	Europe
odoratus	Sweet Pea	14	Simonet 1932c	HP	Sicily, *cult*
		(28)	Fabergé 1935		
venosus		28	Senn 1938	Fo	N. America

CICER $x=7, 8$

soongaricum		14	Iyengar 1939	G	N.W. Him.
arietinum	Chick Pea	14?	Rau 1929b	GFoV	Eur., W. As., Ind.
		16 (32)	Milovidov 1932		
		16	Thomas unp.		
as *kabulium*	Kabuli Gram	16	Dixit 1932, Iyengar 1936		
pinnatifidum		16	Tschechow, T. 1938	G	A. Minor, Mesop.

TRIBE II: GALEGEAE

SESBANIA $x=6, 7, 8$

tetraptera		12	Senn 1938	Ma	Trop. Afr.
grandiflora	Agathi, Vegetable Humming Bird	14	Krishnaswamy *et al.* 1935a	HMaV	Mauritius, Australia

SESBANIA (*cont.*)					
australis		30	Kreuter 1930	FoMa	N. Zealand
aculeata	Dhencha	32	Kawakami 1930	FoMaT	Tropics
aegyptiaca	Sesban	—		HMMa	Egypt
INDIGOFERA $x=6, 7, 8$					
anil (*sumatrana*)	Indigo	12	Senn 1938	D	S. Tr. Asia
parviflora		14	Hagerup 1932	Ma	Tropics
aspera		16	,, ,,	—	Trop. Afr.
diphylla		16	,, ,,	—	,,
kirilowi		16	Kawakami 1930	Ma	Kor., China
pseudotinctoria		16	,, ,,	DMa	Japan
viscosa		16	Hagerup 1932	Ma	Tr. Afr., India
sessiliflora		32	,, ,,	—	Trop. Africa
suffruticosa	Indigo	32	Kawakami 1930	DMa	S. America
decora		48	Tschechow 1930	—	China
divaricata?		48	Senn 1938	—	—
gerardiana	Himalayan I.	48	Kreuter 1930	D	Himalayas
arrecta	" Java " I.	—		DMa	Trop. Africa
angustifolia		—		(D)Ma	,,
cytisoides		—		(D)Ma	,,
disperma		—		(D)Ma	India
endecaphylla		—		FoMa	O.W. Trop.
enneaphylla		—		Ma	Ind., Tr. Af.
glabra (*pentaphylla*)		—		DMa	Trop. Africa
hirsuta		—		(D)Ma	Tropics
leptostachya	" Natal " I.	—		D	Himalayas
linifolia		—		FoMa	Trop. Asia
oligosperma	" Guatemala " I.	—		D	Trop. Africa
sericea		—		(D)	,,
tinctoria	Ceylon I	—		D	Ind., Ceylon
trifoliata		—		(D)M	Tr. Asia & Austr.
GUELDENSTAEDTIA $x=7$					
monophylla		14	Tschechow 1935	—	Sib., Altai
CYAMOPSIS $x=7$					
psoralioides	Cluster Bean	14	Rangaswamy 1933	FoV	India
senegalensis		—		Fo	Tropics
stenophylla		—		Fo	,,
tetragonoloba		—		Fo	,,
COLUTEA $x=8$					
arborescens	Bladder Senna	16	Tschechow 1930	H	Med., A. Minor
frutescens		—		H	S. Africa
SWAINSONA $x=8$					
coronillaefolia		32	Cooper 1936	H	Australia

GALEGA $x=8$					
officinalis	Goat's Rue	16	Senn 1938	FoH	Eur., W. As.
TEPHROSIA (CRACCA) $x=8$					
hookeriana		32	Kawakami 1930	Ma	E. Indies
candida	Boga Medola	—		Ma	Trop. Asia
purpurea		—		DMa	Trop. Africa
toxicaria	Yarro Conalli	—		Ma	Trop. Am.
vogeli	Igun	—		IMa	Trop. Africa
WISTARIA (MILLETTIA) $x=8$					
floribunda	Japanese W.	16	Kawakami 1930	H	Japan
		24	Matsuura 1937		
frutescens		16	Kawakami 1930	H	S.E: U.S.A.
macrostachya		16	Roscoe 1927	H	C: U.S.A.
sinensis	Chinese W.	16	,, ,,	H	China
venusta	Silky W.	16	,, ,,	H	Japan
CLIANTHUS $x=8$					
puniceus	Parrot's Bill	16	Tschechow 1935	H	New Zeal.
CALOPHACA $x=8$					
wolgarica		16	Kreuter 1930	H	S. Rus., Turkest.
CARAGANA $x=8$					
arborescens	Pea Tree	16	Senn 1938	H	Sib., China
frutex		32	,, ,,	H	S. Rus., Sib.
GLYCYRRHIZA $x=8$					
aspera		16	Tschechow 1930	M	E. Eur., C. Asia
echinata	Chinese L.	16	Senn 1938	MSu	E. Medit., S. Rus.
glabra	Liquorice Root	16	Tschechow 1935	MSu	Med., Asia
uralensis	Chinese L.	16	,, 1930	MSu	Siberia
BISERRULA $x=8$					
pelecinus		16	Kreuter 1930	—	Med. Canaries
OXYTROPIS $x=8$					
uralensis (*halleri*)		16	Tschechow 1930	H	C. & E. Eur.
vaginata		16	,, ,,	—	Siberia
rishiriensis		c. 53	Sakai 1934	—	Japan
ASTRAGALUS $x=8, 11, 12$					
$x=8$					
alopecuroides		16	Kreuter 1930	H	Siberia
alopecuros		16	Tschechow 1935	—	C. Asia
altaicus		16	,, ,,	—	Altai
aristatus		16	,, ,,	H	S. Europe
buceras		16	,, ,,	H	,,
canadensis (*carolinianus*)		16	,, ,,	FoH	N. America
candidissimus		16	,, ,,	—	Sib., N. Am.
chinensis		16	,, ,,	H	China

ASTRAGALUS (*cont.*)

danicus (hypoglottis)		16	Tschechow 1935	FoH	Europe
glycyphyllos		16	„ „	FoH	C. Eur., W. As.
narbonensis		16	„ „	H	France, Sp.
sulcatus		16	„ „	H	Eur., Sib.
sieversianus		16	„ „	H	Pers., Turk.
sikkimensis & 17 other spp.		16	„ „	—	Himalayas
sinicus		16	Sugiura 1936b	H	China
boeticus	Swedish Coffee	16, 30	Tschechow 1935	BH	Medit.
edulis		28?	Kreuter 1930	Fo	Algeria
adsurgens		32	Sakai 1935	FoH	E. Sib., Japan
bubaloceras		32	Tschechow 1935	—	Morocco
campylotrichus		32	„ „	—	Temp. Asia
campylorhynchus		36	„ „	—	A. Min., Turkest.
asper		48	„ „	—	S. Eur., Cau.
hamosus		48	„ „	H(V)	Medit., N. Africa
scorpioides		48	„ „	—	Spain
vimineus (fruticosus)		48	„ „	—	E. Siberia
alpinus		*c.* 56	„ „	—	N. Arct. & Temp.
cicer		64	„ „	FoH	S. Europe
echinus		64	„ „	H	Asia Minor
mexicanus		64?	„ „	HV	Ill., Texas
onobrychis		64, 72	„ „	H	Eur., W. As.
verus		64	„ „	—	Persia
brachylobus		96	„ „	—	Caspian
$x=11$					
crassicarpus		22	Vilkommerson 1943	—	N. America
lentiginosus		22	„ „	—	„
pectinatus?		22	„ „	—	Syria
rafaelensis		22	„ „	—	Utah
toanus & 8 other species		22	„ „	—	W. N. Amer.
grayi		44	„ „	—	„
$x=12$					
beathii		24	„ „	—	N. America
confertiflorus		24	„ „	—	„
flavus & 7 other species		24	„ „	—	„
aboriginorum		—		R	Arctic N. Am.
christianus		—		R	A. Min., Syr.
creticus	Tragacanth	—		M	Greece
florulentus	Manna	—		M	Persia
gummifer	Syrian Tr.	—		M	Syria
kurdicus	Kurdistan Tr.	—		M	Kurdistan
sarcocolla		—		M	Persia

ROBINIA $x=10$					
fertilis		20	Whitaker 1934c	H	S.E: U.S.A.
hartwigii		20	„ „		„
kelseyi		20	„ „	H	N. Carolina
luxurians		20	„ „	H	S.W:U.S.A.
viscosa		20	„ „	H	S.E: U.S.A.
pseudacacia	Black Locust	20	Kreuter 1930	H	C.E: U.S.A.
boyntonii		30	Whitaker 1934c		S.E: U.S.A.
hispida	Rose Acacia	30	„ „	H	„
PSORALEA $x=10$					
bituminosa		20	Kreuter 1930	H	Canaries
as *palestina*		20	„ „		Med., Arab.
glandulosa	Jesuits' Tea	20	„ „	B	Chile, Peru
macrostachya	Leather Root	20	„ „	R	N. America
hypogaea		—		R	„
esculenta	Prairie Potato	—		R	„
plicata		—		Fo	
AMORPHA $x=10$					
californica		20	Kreuter 1930	H	California
canescens	Lead Plant	20	Tschechow 1935	H	N. America
microphylla (*nana*)		20	„ „	H	C. & N. Am.
fruticosa	Bastard Indigo	40	„ 1930	DH	N. America
CARMICHAELIA $x=15$					
australis		30	Kreuter 1930	H	New Zealand
GLIRICIDIA					
maculata		—		H	Ceylon

TRIBE III: LOTEAE

SECURIGERA $x=6$					
coronilla	Hatchet Vetch	12	Tschechow & K 1932a	H	S. Europe
ANTHYLLIS $x=6, 7, 8$					
alpestris		12	Tschechow & K 1932a	—	C. Europe
maritima		12	Tschechow & K. 1932a	—	N. Europe
vulneraria	Kidney Vetch	12	Corti 1931a	FoH	Eur., W. As., Abyss.
barba jovis		14	Tschechow & K. 1932a	FoH	Medit.
gerardii		16	„ „ „	Fo	W. Medit.
tetraphylla		—	„ „ „	Fo	Medit.
heterophylla				H	Portugal

LOTUS $x=6, 7$					
angustissimus		12, 24	Tschechow & K. 1932a	Fo	Eur., N. As.
tenuis		12	,, ,,	Fo	Temp.
uliginosus		12	Dawson 1941	Fo	Eur., Med.
		24	Milovidov 1941		
corniculatus	Bird's Foot Trefoil	24	,, ,,	FoH	Temp. Eur. & Asia
v. *alpestris*		24	Tschechow & K. 1932a		
hispidus	Hairy Deer V.	24	,, ,,	Fo	Eur., N. Afr.
cytisoides		14	,, ,,	Fo	Medit.
edulis		14	Senn 1938	Fo	,,
ornithopodioides		14	Tschechow & K. 1932a	Fo	,,
siliquosus		14	,, ,,		Med., C. Eu.
tetragonolobus	Winged Pea	14	,, ,,	FoHV	Medit.
creticus		28	,, ,,	Fo	,,
australis	Austr. Trefoil	—		Fo	Australia
DORYCNIUM $x=7$					
herbaceum		14	Tschechow & K. 1932a	H	S. Eur., A.M.
hirsutum		14	,, ,,	H	Medit.
rectum		14	,, ,,	H	,,
suffruticosum		14	,, ,,	H	C. & S. Eur.
HYMENOCARPUS $x=8$					
circinnatus		16	Tschechow & K. 1932a	—	Med.-Pers.

TRIBE IV: TRIFOLIEAE

TRIFOLIUM $x=7, 8, 9$					
$x=7$					
angustifolium	Fineleaf C.	14	Karpechenko 1925	Fo	Eur. N. Afr.
arvense	Rabbit Foot C.	14	,, ,,	Fo	O.W. Temp.
aureum (*agrarium*)	Hop Clover	14	Wulff 1939b	Fo	Eur., Med.
badium		14	Bleier 1925	Fo	Eur., Med.
campestre (*procumbens*)	Mignonette C.	14	Karpechenko 1925	Fo	,,
incarnatum	Crimson C.	14	,, ,,	Fo	S.W. Eur. Alg.
micranthum (*filiforme*)	Slender C.	14	,, ,,	Fo	Eur., Cauc.
pratense	Red Clover	14 (28)	Levan 1942a	Fo	Eur., W. As., Alg.
spadiceum		14	Karpechenko 1925	Fo	C. Eur., W. Asia
squarrosum		14	,, ,,	Fo	Med., W. As.

TRIFOLIUM (*cont.*)					
striatum	Knotted C.	14	Wulff 1939a	Fo	S. Eur., A.M.
dubium (*minus*)	Suckling C.	28	Bleier 1925	Fo	Europe
$x=8$					
albopurpureum		16	Wexelsen 1928	—	Syria
alexandrinum	Berseem, Egyptian C.	16	” ”	Fo	N. Africa
alpestre	Purple Globe C.	16	Karpechenko 1925	Fo	S. Eur., Sib.
fragiferum	Strawberry C.	16	” ”	Fo	Med., Abys.
fucatum	Puff Clover	16	Wexelsen 1928	Fo	N.W. Amer.
glomeratum	Cluster C.	16	” ”	Fo	Med., W. Eur.
hybridum	Alsike C.	16	Kawakami 1930	Fo	S. Europe
lappaceum	Burdock C.	16	Karpechenko 1925	Fo	Med.—Pers.
maritimum		16	” ”	Fo	Med., S.W. Asia
microcephalum		16	Wexelsen, 1928	Fo	Britain
montanum	Mountain C.	16	Karpechenko 1925	Fo	S. Eur., N. Asia
obtusiflorum	Soursalt C.	16	Wexelsen 1928	Fo	W:N. Amer.
ochroleucum		16	Bleier 1925	Fo	Eur., A.Min.
reflexum	Buffalo C.	16	Wexelsen 1928	Fo	N. America
resupinatum	Persian C.	16	Karpechenko 1925	Fo	Afghan.
rubens		16	” ”	Fo	C.S. Eur.
scabrum	Rough C.	16	” ”	Fo	Med., W. Eur.
subterraneum	Subterranean C.	16	Wexelsen 1928	Fo	Med.—Pers.
variegatum	White Tip C.	16	” ”	Fo	W:N. Amer.
thatii		16	Bleier 1925a	Fo	S., C. & W. Eur.
tumens		16	Karpechenko 1925	Fo	Cauc., Pers., Afgh.
dichotomum		32	Wexelsen 1928	Fo	N. America
repens	White or Dutch C.	32	Atwood & H. 1940	Fo	O.W: Temp.
		(64)	Levan 1942a		
lupinaster		48	Karpechenko 1925	Fo	Jap., Korea
wormskoeldii	Sierra Clover	*c.* 48	Wexelsen 1928	Fo	S. Europe
medium	Zigzag Clover	*c.* 80	Karpechenko 1925	Fo	Eur., N. Am.
		c. 84	Levan, L. & L. 1942		
		96, 98	Bleier 1925		
		c. 130	Wexelsen 1928		
pannonicum	Hungarian C.	*c.* 130	Karpechenko 1925	Fo	Eur., S.W. Asia
		c. 180	Tschechow 1930		
$x=9$					
canescens		18	S. & S. 1940	Fo	Cauc., A.M.
MEDICAGO	$x=7, 8$				
hispida	Tooth M., Bur C.	14	Fryer 1930	FoMa	S. Europe

MEDICAGO (*cont.*)

as *denticulata*		16	Ghimpu 1930	FoMa	
rigidula	Tifton Bur C.	14	Fryer 1930	—	Europe
		16	Ghimpu 1930		
carstiensis		16	Fryer 1930	—	Europe
ciliaris		16	Ghimpu 1929b	Fo	Medit.
disciformis		16	,, 1928	—	S. Eur., A. Minor
echinus		16	,, ,,	—	Medit.
gerardi		16	,, 1929b	—	Europe
helix		16	,, ,,	—	Medit.
intertexta		16	Fryer 1930	—	S. Europe
laciniata		16	,, ,,	—	Medit.
litoralis		16	,, ,,	—	,,
maculata (*arabica*)	Spotted Medick	16	Ghimpu 1928	FoMa	W. & S. Eur
marina		16	,, 1929b	—	—
minima	Woolly Bur M.	16	,, ,,	Fo	E. Eur.
murex		16	Fryer 1930	—	Europe
muricata		16	,, ,,	—	,,
nigra		16	Ghimpu 1929b	—	N. Temp.
oliviformis (*turbinata*)		16	Tschechow 1932	Fo	Medit.
orbicularis	Button C.	16	Fryer 1930	Fo	Med., Abys
pentacycla		16	Ghimpu 1929b	—	N. Temp.
platycarpa		16	Fryer 1930	Fo	Turkestan
ruthenica		16	,, ,,	Fo	Siberia
soleirolii		16	,, ,,	Fo	Italy
sphaerocarpa		16	Ghimpu 1928	Fo	Medit.
tenoreana		16	,, ,,	Fo	Italy
truncatula (*tribuloides*)		16	,, ,,	Fo	Europe
tuberculata		16	Tschechow 1932	Fo	Medit.
turbinata		16	,, ,,	Fo	,,
lupulina	Black M., Non-such, Hop C.	16, 32	,, ,,	FoMa	N. Temp.
falcata	Yellow Lucerne	16, 32	Ledingham 1940	Fo	N. Temp.
arborea	Tree Alfalfa	32	Ghimpu 1929b	Fo	Medit.
hemicycla		32	D. C. Cooper 1935b	Fo	—
media	Sand Lucerne	32	Fryer 1930	Fo	Temp.
ovalis		32	Tschechow 1932	Fo	Spain
rugosa		32	Fryer 1930	Fo	Europe
sativa	Lucerne, Alfalfa	32	,, ,,	FoMa	Eur., S.W. Asia
scutellata	Snail Clover	32	,, ,,	Fo	Medit.

TRIGONELLA $x=7, 8$

balansae		16	Tschechow 1932	Fo	Gr., A. Min
brachycarpa		16	,, ,,	—	Asia
calliceras		16	,, ,,	—	Caucasus
coerulea	Curd Herb	16	Fryer 1930	SpV	W. Eur., Cauc.
cretica		16	Tschechow, T. 1938		Medit.

TRIGONELLA (*cont.*)					
corniculata	Piring Sak	16	Tschechow 1932	V	S.W. Asia
foenum-graecum	Fenugreek	16	Fryer 1930	GSpV	" "
glomerata		16	Tschechow, T. 1935	—	" "
radiata		16	" "	V	A. Min., Persia
polycerata		28	" 1932	Fo	S.W. Eur.
suavissima		—		Fo	Australia
MELILOTUS $x=8$					
albus	Bokhara C.	16, 24 (32)	Atwood 1936	Fo	Eur., Asia
altissimus		16	Scheerer 1939	Fo	Asia
dentatus		16	Tschechow 1932	Fo	Eur., E. As.
indicus	Sour C., Hexham Scent	16	" "	MaFo	Eur., E. As.
italicus		16	Clarke 1932	FoMa	Medit.
messanensis		16	" "	Fo	"
neapolitanus		16	Tschechow 1932	Fo	Med., A. Minor
officinalis	Sweet C., Common M.	16	" "	Fo	Eur., N. As.
segetalis		16	Clarke 1932	Fo	Medit.
speciosus		16	" 1934	—	Algeria
suaveolens		16	Tschechow 1932	Fo	N. China
sulcata		16	" "	Fo	Medit.
taurica		16	" "	Fo	"
wolgicus		16	" "	Fo	Russia
ONONIS $x=8$					
spinosa	Rest Harrow	32	Tschechow 1932	V	Eur., Med.
alopecuroides		32	" "	—	Medit.
biflora		32	" "	—	Algeria
fruticosa		32	" "	—	Europe
natrix		32	" "	H	S. Europe
ornithopodioides		32	" "	—	Medit.
rotundifolia		32	" "	—	C. Europe
viscosa		32	" "	Fo	S. Europe
reclinata		64	" "	Fo	Med., Abys.
PAROCHETUS $x=8$					
communis	Shamrock Pea	16	Clarke 1934	H	Trop. Asia

TRIBE V: HEDYSAREAE

HIPPOCREPIS $x=7$					
comosa	Horseshoe V.	28	Maude 1940	Fo	Europe
SCORPIURUS $x=7$					
vermiculatus		14	Senn 1938	H	Medit.
sulcatus		14, 28	" "	H	"

HEDYSARUM $x=7, 8$					
elongatum	Sweet Vetch	14	Sakai 1934	Fo	Russia
coronarium	Sulla S. V.	16	Lewitzky, T. 1936	FoH	S. Europe
reesei		—		Fo	—
ORNITHOPUS $x=7, 8$					
sativus	Serradella, Birdsfoot	14 16	Romanenko 1937 Kawakami 1930	Fo	E. Europe
perpusillus		14 14	Milovidov 1941, Maude 1940	Fo	Europe
ONOBRYCHIS $x=7, 8$					
caput-galli		14	Senn 1938	Fo	Medit.
sativa	Sainfoin	14	Romanenko 1937	Fo	*cult*
crista-galli		14 16	Corti 1931a Senn 1938	Fo	S.E. Medit.
pulchella		16	„ „	Fo	Manchuria
viciaefolia (*sativa*)		28	Lewitzky, T. 1936	Fo	Eur., N.W. Asia
LESPEDEZA $x=9, 10, 11$					
homoloba		18	Kawakami 1930	Fo	Japan
sericea		18	Cooper 1936	Fo	Himalayas
sieboldii		18	Kawakami 1930	FoH	Japan, Him
frutescens		18, 20	Young 1940	—	N. America
variegata		18 20	Cooper 1936 Pierce 1939	—	—
bicolor		18 22	Kawakami 1930 Pierce 1939	FoH	Jap., China
cyrtobotrya		18 22	Kawakami 1930 Pierce 1939	Fo	Jap., Korea
daurica		36 *c.* 44	Cooper 1936 Pierce 1939	—	Siberia
capitata		20	Young 1940	—	N. America
hirta (*villosa*)		20	„ „	—	„
inshanica		20	„ „	—	China?
pilosa		20	Pierce 1939	—	Japan
procumbens (*repens*)	Bush C.	20	Young 1940	—	N. America
repens		20	„ „	—	„
simulata		20	„ „	—	„
stipulacea (*striata*)		20	Cooper 1936	—	Japan
stuvei		20	Young 1940	—	N. America
tomentosa (*villosa*)		20	Cooper 1936	—	„
virginica (*sessiliflora*)		20	Young 1940	—	„
floribunda		22	Pierce 1939	—	China
japonica		22	„ „	—	Japan
striata	Japan C.	22	Young 1940	FoMa	„
thunbergii		22	„ „	—	„
virgata		22	Pierce 1939	—	„

DESMODIUM $x=11$						
bracteosum (*cuspidatum*)		22	Young	1940	Fo	N. America
canadense	Hoary Tick	22	”	”	Fo	”
canescens		22	”	”	Fo	”
dillenii		22	”	”	Fo	”
discolor		22	”	”	Fo	Brazil
glabellum		22	”	”	Fo	N. America
grandiflorum		22	”	”	Fo	India
gyrans		22	”	”	Fo	Trop. Asia
gyroides		22	”	”	MMa	S.E. Asia
incanum		22	”	”	Fo	W. Indies
marilandicum (*obtusum*)		22	”	”	Fo	N. America
nudiflorum		22	”	”	Fo	”
paniculatum		22	”	”	Fo	”
rhombifolium (*laevigatum*)		22	”	”	Fo	”
rigidum		22	”	”	Fo	”
rotundifolium		22	”	”	Fo	”
strictum		22	”	”	Fo	Japan
tortuosum (*purpureum*)	Beggarweed	22	”	”	FoH	N. Amer., W. Ind.
triquetrum		22	”	”	MMa	Trop. Asia
triflorum		—			Fo	Tropics
CORONILLA $x=12$						
varia	Crown Vetch	24	Romanenko	1937	FoH	Europe
AESCHYNOMENE $x=20$						
indica	Pith Plant	40	Kawakami	1930	T	Tropics
ARACHIS $x=20$						
hypogaea	Groundnut, Peanut	40	Husted	1936	NOFo	Brazil, *cult*
nambiquarae		40	”	”	O	”
rasteiro		40, 41+f	”	”	O	”
prostrata		40	”	1933	O	”
ALHAGI						
maurorum	Camel Thorn	—			Su	S.W. Asia

TRIBE VI : PHASEOLEAE

CLITORIA $x=8$						
ternata	Butterfly Pea	16	Tschechow & K.	1932a	HDM(V)	Tropics
cajanifolia		—			H	Trop. Amer.
AMPHICARPA $x=10$						
monoica	Hog Peanut	20	Cooper	1936	V	E.N. Amer.
edgeworthii	Wild Bean	—			(V)	Himalayas

GLYCINE $x=10$					
gracilis	Manch. Soya	40	Fukuda 1933	GFo	Manchuria
max	Soya Bean	40	Veatch 1934	GFo	China, *cult*
as *hispida*		40	Fukuda 1933		
as *soya*		38	Yamaha & S. 1936		
		40	Karasawa 1936		
		(80)	Tang & Loo 1940		
ussuriensis	Wild Soya	40	Tschechow & K. 1932a	FoG	E.N. Amer.
javanica	Rhodesian Kudzu Vine	—		Fo	Trop. Afr. & Asia
RHYNCHOSIA $x=11$					
phaseoloidts		22	Tschechow & K 1932a	H	Tropics
minima		22	Senn 1938	—	Tropics
ERYTHRINA $x=11, x_2=21$					
crista-galli	Coral Tree	*c.* 44	Tschechow & K. 1932b	HFoMa Sh	Brazil
herbacea		42	Senn 1938	FoH	S.E. N. Am
indica	Indian C. T.	—		DFoSh MW	Trop. Asia
stricta	Muriku	—		FoShW	India
ABRUS $x=11$					
precatorius	Indian Liquorice, Rosary Pea	22	Senn 1938	MTo	Trop. Asia
CAJANUS $x=11$					
cajan (*indicus*)	Pigeon Pea, Dhal	22	Roy 1933	Fo$_1$GV	India, *cult*
CANAVALIA $x=11$					
ensiformis	Jack Bean	22	Kawakami 1930	MaV	W. Indies
gladiata	Sword Bean	22	Tschechow & K. 1932a	V	O.W. Trop.
plagiosperma		—		V	Cuba
turgida	Wild Sword Bean	—		SbMa	Tropics
DOLICHOS $x=11, 12$					
lablab	Lablab, Bonavist	22	Kawakami 1930	FoG	Abyss., *cult*
		24	Ayyangar & K. 1935		
lubia		22	Tschechow & K. 1932a	V	Egypt
biflorus	Horse Gram	24	Rau 1929b	GFo	Ind. Bur.
ATYLOSIA (DOLICHOS) $x=11$					
barbata (*ornatus*)		22	Tschechow & K.	Ma	Ind. Mal.
PACHYRRHIZUS $x=11$					
angulatus	Asparagus B.	22	Roy 1933	V	Trop. Asia
tuberosus	Potato B.	22	Senn 1938	RV	W. Indies
erosus	Yam B.	—		IR	Tropics

PHASEOLUS *x*=11, 12					
aconitifolius	Math or "Moth" B.	22	Tschechow & K. 1932a	GVFo Ma	India, *cult*
acutifolius	Tepary Bean	22	Karpechenko 1925	V	Ariz., Mex.
angularis	Azuki Bean	22	,, ,,	VG	China, *cult*
aureus	Mung or Green Gram	22	,, ,,	GFoV	India, China, *cult*
		(44)	Kumar & A. 1942b		
as *radiatus*		24	Karpechenko 1925		
calcaratus	Rice Bean	22	E.K.J.	GMaV	India, *cult*
chrysanthos		22	Muto 1929	V	Japan, China
coccineus (*multiflorus*)	Scarlet Runner	22	Karpechenko 1925	V	Peru, *cult*
helvolus	Amberique B.	22	Senn 1938	FoGMa	N. America
lunatus (*limensis*)	Lima Bean	22	Karpechenko 1925	V	Peru, *cult*
mungo	Urd or Black G.	22	,, ,,	GMa	Trop. Asia, *cult*
		24	Rao 1929b		
polystachys	Thicket B.	22	Allard & A. 1940	Ma	E.U.S.A.
ricciardianus	Assam Bean	22	E.K.J.	GV	Assam
semierectus		22	Senn 1938	FoMa	Trop. Amer.
trilobus	Jungli Math B.	22	Karpechenko 1925	(G)Fo Ma	O.W. Trop.
vulgaris	French, Kidney or Dwarf B.	22	Thomas unp.	GV	Peru, *cult*
caracalla	Snail Flower	—		H	Brazil
VIGNA *x*=11, 12					
capensis	Cow Pea	22	Tschechow *et al.* 1932a	V	Trop. Afr., *cult*
glabra (*niloticus*)	Clay Pea	22	,, ,,	V	,,
lanceolata		22	Karpechenko 1925		—
owahnuensis		22	Tschechow & K. 1932a	V	Hawaii
unguiculata	Cow Pea	22	Karpechenko 1925	FoMV	Trop. Afr., *cult*
as *catjang*	Catjang B.	22	,, ,,		
as *sinensis*		24	,, ,,		
sesquipedalis	Asparagus B.	24	,, ,,	VFo	Trop. & Sub-Trop. Asia
marina		—		Ma	O.W. Trop.
DIOCLEA *x*=12					
boykinii		24	Nemec 1910	—	N. Amer.
BUTEA					
frondosa	Flame-of-the-Forest T.	—		DFoFo$_1$ HMTW	India, Burma
superba	Climbing Palas	—		FoReT	,, ,,
KERSTINGIELLA					
geocarpa	Ground Bean	—		V	Trop. Africa

MUCUNA (STIZOLOBIUM)					
alterrima	Mauritius B.	—		G	Trop. Afric
atro-purpurea		—		G	E. Indies
cinerea	Ashy Pod B.	—		V	Asia
deeringiana	Florida Velvet B.	—		V	,,
hasjoo	Yokohama B.	—		VG	China, *cult*
nivea	Lyon Bean	—		GV	O.W. Trop.
pachylobium		—		V	India
pruriens	Cowage	—		FoMa	E. Indies
utilis	Cow Vetch	—		FoMa	,,
PSOPHOCARPUS					
tetragonolobus	Goa Bean	—		RV	Mauritius
longipedunculatus		—		RV	Tropics
PUERARIA					
thunbergiana (*hirsuta*)	Kudzu V.	—		FoRT	China, Japa
phaseoloides		—		MaT	Malaya
tuberosa	Bidan-Kano	—		FoMR	Ind., Burm
VOANDZEIA					
subterranea	Bambarra, Ground Nut	—		NV	Madagascar

TRIBE VII: GENISTEAE

CROTALARIA *x*=7, 8					
incana	Shack-shack	14	Senn 1938	Ma	Trop. Ame
alata		16	Kawakami 1930	Ma	Trop. Asia
anagyroides		16	,, ,,	Ma	,,
arenaria		16	Hagerup 1932	Ma	Senegambia
argyrea		16	Senn 1938	—	Trop. Afric
fulva		16	Eichorn 1937a	Ma	Trop. Asia
juncea	Sunn Hemp	16	Ramanujam *et al.* 1933	FoTMa	Trop. Asia Australia
laburnifolia	Rattlebox	16	,, ,,	Ma	Ind., Phil.
lanceolata		16	Raghavan & V. 1943	Ma	Trop. E. Af
obovata		16	Hagerup 1932		Trop. Afric
retusa		16	Ramanujam *et al.*'33	HMa	Tropics
spinosa		16	Eichorn 1937a		Abyssinia
mucronata (*striata*)		16	Senn 1938	Ma	W. Indies
usaramoensis		16	Kawakami 1930	Ma	E. Tr. Afr
valetonii		16	,, ,,	Ma	E. Indies
verrucosa		16	Ramanujam *et al.* 1933	Ma	Tropics
quinquefolia and 9 other spp.		16	Y. S. Rao 1943	MaT	Trop. Asia
ULEX *x*=8					
nanus (*minor*)	Dwarf Gorse	32	de Castro 1941	—	W. Europe
		64	Tschechow 1931		

ULEX (*cont.*)					
vicentinus		48	de Castro 1941	—	Europe
densus		64	,, ,,	—	,,
erinaceus		64	,, ,,	—	,,
parviflorus (*calyoctomoides*)		32	,, ,,	—	W. Europe
		96	Tschechow 1931		
europaeus	Gorse, Furze	96	,, ,,	Fo	Europe
boivini		*c.* 128	de Castro 1941	—	Medit.
LUPINUS x=8, 9, 10 etc.					
hirsutus	European Blue L.	24	de Zeeuw 1936	FoGH	Medit.
v. *micranthus*		50?	Tuschnjakowa 1935		
subcarnosus	Texas Lupin	36	,, ,,	FoH	Cal., Texas
		48	Savchenko 1935		
albus	Wolf Bean	40	,, ,,	VFo	S. Eur.,
		50	Tuschnjakowa 1935		W. Asia
as *varius*		48	Savchenko 1936		
angustifolius	Blue L.	40	Tuschnjakowa 1935	Fo	Medit.
		48	Kawakami 1930		
arboreus	Tree L.	40	Savchenko 1935	FoH	California
pilosus		40	,, ,,	Fo	Levant
		42	Tuschnjakowa 1935	H	
luteus	Eur. Yellow L.	46	de Zeeuw 1936	GFoV	Medit.
		48	Kawakami 1930		
		52	Savchenko 1936b		
densiflorus	Gully L.	48	Tuschnjakowa 1935	—	California
douglasii		48	,, ,,	—	,,
elegans		48	Savchenko 1935	—	Mexico
micranthus	Field L.	48	Tuschnjakowa 1935	—	W.N. Amer.
mutabilis	S. Amer. L.	48	Savchenko 1935	FoH	S. America
nanus	Sky Lupin	48	Tuschnjakowa 1935	H	California
nootkatensis		48	Maude 1940	—	N.W: N.Am.
ornatus		48	Tuschnjakowa 1935	Fo	N.W: U.S.A.
polyphyllus	Washington L.	48	Cooper 1936	H	W: U.S.A.
pubescens	Rusty L.	48	Savchenko 1935	H	Mex., Guat.
(*hybridus*)		48	Tuschnjakowa 1935		
hartwegii		48-50	,, ,,	H	Mexico
barkeri		50	,, ,,	—	,,
hispanicus	Spanish L.	—		Fo	Spain
termis	Egyptian L.	—		HFo	Egypt
GENISTA x=12					
pilosa		24	Tschechow 1931	—	S. Europe
ferox		48	,, ,,	—	N. Africa
sagittalis		*c.* 44	,, ,,	H	Eur., W. As.
tinctoria	Dyer's Green-weed	48	,, ,,	DHV	Eur., Cauc.
triangularis		48-50	,, ,,	—	Banat
CYTISUS x=12 etc.					
canariensis		46	Tschechow 1931	H	Canary Is.
nigricans		48	,, ,,	—	S. Europe

CYTISUS (*cont.*)					
purpureus		48	Senn 1938	H	S. Austria
scoparius	Scotch Broom	48	Sugiura 1931,	BHMSp	C. Europe
		46	Maude 1940		
sessilifolius		52	Tschechow 1931	—	S. Europe
LABURNUM	*x*=12				
alpinum	Scotch L.	48	Tschechow 1931	H	S. Europe
vulgare	Common L.	48	Ishikawa 1916	H	,,
SPARTIUM	*x*=12?				
junceum	Spanish Broom	48-52	Tschechow 1931	H	Med., Can.
HOVEA					
longifolia		—		H	Australia
pungens		—		H	,,

TRIBE VIII : SOPHOREAE

SOPHORA	*x*=7, 8, 9				
davidii		18	Tschechow 1931	W	China
moorcroftiana		*c.* 16	Lechtova-Trnka 1931	W	Him., China
flavescens		18	Tschechow 1931	D	Siberia
as *angustifolia*		18	Kawakami 1930		
chinensis	Chinese Pagoda T.	28	,, ,,	M	China
japonica	Japanese P. T.	28	Tschechow 1931	HMD	China, Japan
CASTANOSPERMUM					
australe	Australian Chestnut	—		N	Australia
MYROXYLON					
pereirae	Balsam of Peru	—		MRe	C. America
toluifera	Balsam of Tolu	—		MRe	Trop. Amer.
BAPHIA					
nitida	Camwood T.	—		DW	W. Africa

TRIBE IX : PODALYRIEAE

BAPTISIA	*x*=9				
australis	Blue False Indigo	18	Tschechow 1931	H	S.E:U.S.A.
sulphurea	Yellow False I.	18	,, ,,		E:N. Amer.
tinctoria	False Indigo	18	,, ,,	HDV	,,
PIPTANTHUS	*x*=9				
nepalensis (*laburnifolius*)		18	Tschechow 1931	H	Himalayas
THERMOPSIS	*x*=9				
alterniflora		18	Tschechow 1931	—	Asia, N. Am.
montana		18	,, ,,	H	Turkestan

TRIBE X: DALBERGEAE

DERRIS $x=10, 11$					
elliptica	Tuba Root	20	Heyn 1938	I	Malaya
		22	Skalinska unp.		
malaccensis	Malacca D.	22	Heyn 1938	I	Malaya
amazonica	Amazon D.	—		I	Brazil
chinensis	Chinese D.	—		I	Indo-China
heptaphylla		—		DM	Malaya
polyantha		—		I	Philippines
philippinensis	Philippine D.	—		I	”
robusta		—		I	Assam
thyrsifolia	Tangmé	—		I	Malaya
trifoliata		—		I	Polyn., Cey.
scandens	Malay Jewel V.	—			E. Indies
GALEDUPA (PONGAMIA) $x=11$					
pinnata (*glabra*)	Pongam, Indian Beech	22	Patel & N. 1937	FoHO ShW	Ind., Ceylon
ANDIRA					
araroba	Chrysarabinum T.	—		M	Brazil
inermis	Cabbage-Bark T.	—		MW	Trop. S. Am., W. Indies.
APIOS					
tuberosa	Wild Bean	—		R	E. N. Amer.
DALBERGIA					
hupeana	White Chandan	—		W	India
latifolia	Rosewood T.	—		W	India
melanoxylon	Blackwood T.	—		W	Trop. Africa
sissoo	Sissoo	—		W	India
DIPTERYX					
odorata	Tonquin T.	—		PW	Trop. S. Am.
INOCARPUS					
edulis	Tahiti Chestnut	—		N	Pacific Is.
LONCHOCARPUS					
cyanescens	Yoruba Indigo	—		D	W. Afr.
nicou	Hiari	—		I	Tr. S. Am.
urucu	Timbo-urucu	—		I	Brazil
utilis	Timbo-blanco	—		I	”
PTEROCARPUS					
erinaceus	Afr. Rosewood	—		W	W. Afr.
indicus	Paduk	—		HW	Andamans
santalinus	Red Sanders	—		DWM	India
marsupium	Indian Kino	—		MW	”

151. HAMAMELIDACEAE

CORYLOPSIS $x=12$					
pauciflora	Winter Hazel	24	Anderson & S. 1935	H	Japan
spicata		72	” ”	H	”
veitchiana		72	” ”	H	China
DISTYLIUM $x=12$					
racemosum		24	Sugiura 1936a	H	Japan
HAMAMELIS $x=12$					
vernalis	Witch Hazel	24	Anderson & S. 1935	M	E:N. Amer.
virginiana	N. Amer. W.H.	24	Whitaker 1933a	HM	” ”
japonica		—		H	Japan
mollis		—		H	C. China
FOTHERGILLA $x=12$					
monticola		48	Anderson & S. 1935	H	S.E: U.S.A.
major		72	” ”	H	”
LIQUIDAMBAR $x=15$?					
styraciflua	Sweet Gum	30	Anderson & S. 1935	M	East U.S.A
orientalis	Storax	—	” ”	M	Asia Minor
ALTINGIA					
excelsa		—		W	Ind., Siam

152. EUCOMMIACEAE

EUCOMMIA $x=17$					
ulmoides ♂	Ch. Gutta Percha	34	E.K.J.	M	China

154. BUXACEAE

BUXUS $x=7$ or 14					
balearica	Spanish Box	28	Simonet & M. 1932	HW	Eur., S.W. & C. Asia
sempervirens (*wallichiana*)	Common Box	28	” ”	W	” ”
SARCOCOCCA $x=7$ or 14 [Apomixis]					
pruniformis		28	Simonet & M. 1932		E. Ind., Ma
humilis		56	” ”	H	China
ruscifolia		56	” ”	H	”

155. PLATANACEAE

PLATANUS $x=7$ or 21					
acerifolia	London Plane	42	Sax 1933b	Sh	*cult*
occidentalis	Buttonwood	42	” ”	ShW	N.E: U.S.
orientalis	Oriental Pl.	—		ShW	S.W. Asia

156. SALICACEAE

POPULUS $x=19$					
brabantica etc.		38	Dillewijn 1939	—	Europe
canadensis (*serotina*)	Carolina P.	38	Blackburn 1929	W	*cult*
eugenei		38	,, ,,	W	,,
generosa		38	,, ,,		,,
grandidentata		38	Peto 1938	W	N. America
lasiocarpa	Chinese P.	38	Wettstein, T. 1936	W	China
nigra	Black P.	38	Blackburn & H. 1924	W	Europe
v. *italica*	Lombardy P.	38	S. & M. 1939		
sieboldii		38	Nakajima 1937	W	Japan
simoni		38	Meurman 1925	W	China
tremuloides	Quaking Aspen	38	Erlanson & H. 1927	WD	N. America
trichocarpa	Calif. P.	38	Meurman 1925	W	California
alba	White Poplar	38, 57	Peto 1938, Dillewijn 1939	WD	Europe, N. Asia
tremula	Eur. Aspen	38, 57	Johnsson 1940a	W	Europe
		(57-76)	,, 1942b		
		(76)	Bergström 1940		
balsamifera	Cottonwood,	38	Meurman 1925	M	N. Am., Asia
	Balsam P.	76	Blackburn & H. 1924		
canescens	Grey P.	38, 57	Peto 1938	W	Europe
candicans	Balm of Gilead	—		HM	*cult*
SALIX $x=19$					
arbuscula	Little Tree-Willow	38	Holmberg 1931	H	Eur., N. Asia
bakko (*bacco*)		38	Nakajima 1937	—	Japan
daphnoides	Daphne W.	38	Blackburn & H. 1924	—	Eur., N. As.
depressa		38	Holmberg 1931	—	,,
glandulosa		38	Nakajima 1937	—	Japan
gracilistyla	Big Catkin W.	38	Håkansson 1929a	H	,,
hastata	Halbert W.	38	Holmberg 1931	—	Eur., N. As.
herbacea	Dwarf W.	38	,, ,,	H	North, Arct.
humboldtiana	Humboldt W.	38	Bowden 1940a	—	S. America
integra		38	Nakajima 1937	—	Eur., N. As.
japonica	Japanese W.	38	Sinoto 1929	H	Cauc., N. As.
lanata	Woolly W.	38	Holmberg 1931	H	Eur., N. As.
lapponum	Lapland W.	38	,, ,,	—	,,
leucopithecia		38	Sinoto 1929	—	Japan
melanostachys		38	,, ,,	—	,,
myrtilloides	Wortleberry W.	38	Holmberg 1931	H	Eurasia
purpurea	Purple Osier	38	Blackburn & H. 1924	TH	Europe
pyrolifolia	Balsam W.	38	Marklund, L. & L. 1942	H	N. Africa

SALIX (*cont.*)

repens	Creeping W.	38	Holmberg 1931	H	Eur., N. As.
reticulata	Net-leaf W.	38 38	„ „ S. & S. 1941	H	Arct. & N. Region
viminalis	Osier, Basket W.	38	Sinoto 1929	TW	Eurasia
sachalinensis	Sakhalin W.	38, *c.* 48	Sinoto 1929	—	Sachalin
triandra	Almond-leaf W.	38 (44)	Blackburn & H. 1924	—	Eur. S.W. Asia
caprea	Goat W.	38 38 (57)	Nakajima 1937 Håkansson 1929a Marklund, L. & L. 1942	HP	Eur., N. As.
aurita	Round-ear W.	38 76	Håkansson 1929a Harrison 1926		Eur., N. As.
alba	White Willow	76	Blackburn & H. 1924	W	Europe
v. *coerulea*	Cricket-bat W.	76	Wilkinson 1941		
cinerea	Grey W.	76	Harrison 1926	H	Eur., S.W. & N. Asia
laurina (*viminalis* × *caprea*)	Goat Tea W.	76	Heribert-Nilsson 1928	—	Europe
lucida	Shining W.	76	Harrison 1926	—	N. America
pentandra	Laurel Leafed W.	76	Blackburn & H. '24	—	Eur., N. As.
polaris	Polar W.	76	Holmberg 1931	—	Arctic
dasyclada	Woolly-twig W.	76, 114	Marklund, L. & L. 1942	—	Europe
fragilis	Crack W.	76 114	Blackburn & H. '24 Marklund, *l.c.*	W	Eur., N. As.
myrsinifolia (*andersoniana*)		114	Harrison 1926	H	Eur., W. & N. Asia
phylicifolia	Tea-leaf W.	114	Håkansson 1933	H	Eur., N. As.
borealis		152	Marklund, *l.c.*	H	„
dasycladioides		152	Heribert-Nilsson 1935	H	Europe
glauca	Grey-leaf W.	152	Holmberg 1931	H	As., N. Am.
myrsinites	Myrtle-leaf W.	152	„ „	H	Eur., Asia
superlaurina		152	Heribert-Nilsson 1935	H	*cult*
babylonica	Weeping W.	—		H	China
nigra	Black W.	—		W	N. America

TOISUSU (SALIX) $x=19$

cardiophylla		38	Suto 1938	—	N.E. Asia

157. GARRYACEAE (CORNACEAE)

GARRYA $x=11$

elliptica	Silk-Tassel Bush	22	Meurman 1930	H	Cal. Oregon

159. MYRICACEAE

MYRICA $x=8$					
carolinensis	Northern Bayberry	16	Stokes 1937	HM	N. America
cerifera	S. Wax Myrtle	16	„ „	HM	„
pumila		16	„ „	—	„
rubra		16	Sugiura 1927	HSp	Trop. & Sub-Trop. As.
gale	Sweet Gale	48	Hagerup 1941	HSp	N. Temp.
californica	Pacific W.M.	—		H	N. America
cordifolia	Myrica	—		HO	S. Africa
faya	Candleberry-myrtle	—		HF	Canary
nagi	Yang-mae, Kaphal	—		F	Tr. & Sub-Tr. Asia
sapida		—		D	Tr. & Sub-Tr. Asia
COMPTONIA $x=8$					
peregrina	Sweet Fern	32	Stokes 1937	HM	E:N. Amer.

161. BETULACEAE

ALNUS $x=7$ [Apomixis]					
crispa	Amer. Green A.	28	Woodworth 1931	W	N. America
incana	Speckled A.	28	„ „	W	N. Temp.
maritima		28	„ „	W	N. America
rubra	Red Alder	28	Wetzel 1929	W	W:N. Amer.
rugosa	Hazel A.	28	Woodworth 1931	W	*cult*
viridis	Eur. Green A.	28	Wetzel 1929	W	N. Temp.
glutinosa	Eur. Black A.	28	„ „	MW	Eur., N. As.
		56	Woodworth 1931		
cordata	Italian A.	42	Jaretzky 1930	W	Eur., S.W. Asia
subcordata	Caucasian A.	42	„ „	W	Cauc., Pers.
japonica?	Jap. Alder	56	Woodworth 1931	W	Japan
spaethii		56	„ „	W	*cult*
BETULA $x=7$					
coerulea		28	Woodworth 1931	—	E:N. Amer.
fontinalis	Water Birch	28	„ „	W	W:N. Amer.
humilis		28	Jaretzky 1930	—	Eur., N. As.
lenta	Sweet B.	28	Woodworth 1931	MW	N. America
maximowiczii	Monarch B.	28	„ „	W	Japan
nana	Dwarf Arctic B.	28	Flovik 1940	W	N. Region
nigra	River B.	28	„	W	N. America
pendula	Eur. White B.	28	„	W	N.E. Asia, N. Amer
populifolia	Grey B.	28	„	—	—
utilis	Himalayan B.	28	„	WT	Jap., Him.

BETULA (*cont.*)

verrucosa		28	Johnsson 1940b	OW	Eur., N. As., N. Amer.
japonica	Jap. White B.	28	Woodworth 1929a	—	Japan
v. *mandschurica*		56	„ „		Manch., Korea
pubescens (*odorata*)		56	Johnsson 1940a	H	Eur., N.Am., N. Asia
verrucosa × *pubescens*		42	Helms & J. 1925	—	*cult*
pumila	Low B.	56	Woodworth 1931	W	N. America
urticifolia		56	Jaretzky 1930	—	*cult*
papyrifera	Paper B. Canoe B.			TW	N. America
v. *cordifolia*	Mountain P. B.	56	Woodworth 1929a		
v. *subcordata*		56	„ 1931		
v. *kenaica*		70	„ „		
v. *occidentalis*		84	„ „		
grossa	Jap. Cherry B.	84	„ „	W	Japan
lutea	Yellow B.	84	„ „	W	N. America
davurica		90	„ 1929a	W	Sib., N. Am.

162. CORYLACEAE

CORYLUS $x=7$

americana	Amer. Hazel	28	Woodworth 1929b	N	N. America
avellana	Eur. H.	28	„ „	NW	Pyr.–T.Shan
colurna	Turkey Filbert, Cobnut	28	„ „	N	E. Eur., A. Min., Him.
heterophylla	Siberian F.	28	„ „	N	N.E. Asia
maxima	Giant F.	28	„ „	N	Eur., A.Min.
pontica	Caucasian F.	28	„ „	N	E. Eur., A. Min., Him.
rostrata	Beaked H.	28	„ „	N	E: N. Amer.
sieboldiana	Japanese F.	28	„ „	N	Eur., A.Min.
tibetica		28	„ „	N	Himalayas
ferox	Himalayan H.	—			„

CARPINUS $x=8$

caroliniana	Bluebeech	16	Woodworth 1931	W	N. America
cordata		16	„ „	W	Japan
japonica	Jap. Hornbeam	16	„ „	W	„
laxiflora	Loose flower H.	16	„ „	W	„
orientalis	Oriental H.	16	„ „	W	S. Europe
tschonoskii	Yeddo H.	16	Johnsson 1942a	W	Japan
turczaninovii		16	Woodworth 1931	W	China
betulus (*carpinizza*)	Eur. H.	16, 64	Johnsson 1942a	W	Eur., Cauc., Persia

OSTRYA $x=8$

carpinifolia	Eur. Hop H.	16	Woodworth 1931	—	S. Eur., A. Minor
japonica	Jap. Hop H.	16	„ „	—	E. Asia
virginiana	Amer. Hop H.	16	„ „	—	E: U.S.A.

OSTRYOPSIS					
davidiana		16	Woodworth 1931	—	Asia Minor
nobilis		—		—	China

163. FAGACEAE

CASTANEA $x=12$					
dentata	Amer. Chestnut	24	Jaretzky 1930	NW	E: U.S.A.
sativa (vesca)	Sweet or Spanish Ch.	24	„ „	NW	S. Eur., W. As., N. Afr.
crenata	Jap. Ch.	—		NW	Japan
seguini	Chin. Dwarf Ch.	—		N	E. Asia
pumila	Chinquapin	—		N	N. America
FAGUS $x=12$					
sylvatica	Eur. Beech	24	Jaretzky 1930	NOW	Europe
grandifolia	Amer. Beech	—		W	E:N. Amer.
QUERCUS $x=12$					
acutissima	Sawtooth Oak	24	Yamazaki 1936	W	China
alba	White Oak	24	Sugiura 1931	W	N. America
agrifolia	Coast Live Oak	24	Duffield 1940	W	California
bicolor	Swamp White O.	24	„ „	W	N. America
borealis	Northern Red O.	24	„ „	W	„
cerris	Turkey Oak	24	„ „	HW	Eur., S.W. Asia
chrysolepis	Canyon Live O.	24	„ „		California
coccifera	Kermes Oak	24	Ghimpu 1929b	Fo$_1$W	Medit.
coccinea	Scarlet Oak	24	Duffield 1940	W	N. America
crispula (mongolica)		24	Sugiura 1936b	W	China, Jap.
dalechampic (robur)		24	Jaretzky 1930		Eur., W. As.
douglasii	Blue Oak	24	Duffield 1940	W	California
dumosa	Calif. Scrub O.	24	„ „		„
engelmanii	Englemann O.	24	„ „		—
fruticosa (humilis)		24	Natividade 1937	NW	Medit.
garrayana	Oregon White O.	24	Duffield 1940	W	W:N. Amer.
glandulifera		24	Jaretzky 1930		Japan
ilex	Holly Oak	24	Natividade 1937	W	Med., S.W. Asia
ilicifolia	Scrub Oak	24	Duffield 1940		C. America
imbricaria	Shingle Oak	24	H. J. Sax 1930	W	N. America
incana		24	Vignoli 1933	W	Himalayas
lanuginosa (pubescens)		24	„ „	W	„
libani	Lebanon Oak	24	Jaretzky 1930	W	Syria
lobata	Calif. White O.	24	Duffield 1940	DW	California
lusitanica	Portuguese O.	24	Natividade 1937	W	Med., S.W. Asia
macrocarpa	Bur Oak	24	H. J. Sax 1930	W	N. America
marylandica	Blackjack O.	24	Friesner 1930	W	„
michauxii (prinus)		24	„ „	W	„
mongolica (crispula)	Mongolian O.	24	H. J. Sax 1930	Fo$_1$W	E. Asia

QUERCUS (*cont.*)

muehlenbergii	Chinkapin O.	24	H. J. Sax 1930	W	N. America
nigra	Water O.	24	Jaretzky 1930		,,
palustris	Pin Oak.	24	Ghimpu 1929b	W	,,
polymorpha		24	Vignoli 1933	W	Mexico
pontica		24	Jaretzky 1930	W	Asia Minor
prinoides	Dwarf Chinkapin O.	24	Friesner 1930	W	N. America
prinus (*montana*)	Swamp Ch. O.	24	,, ,,	W	,,
robur	English Oak	24	Duffield 1940	DNW	Eur., N. Am
petraea (*sessiliflora*)	Durmast O.	24	Natividade 1937	W	Eur., W. A
stellata	Post Oak	24	Duffield 1940	W	N. America
suber	Cork Oak	24	,, ,,	TW	Med., S.W Asia
tomentosa		24	Vignoli 1933	W	Mexico
toza (*pyrenaica*)		24	,, ,,	W	S. Europe
velutina	Black Oak	24	Duffield 1940	DW	N. America
wislizenii	Interior Live O.	24	,, ,,	W	California
aegilops	Valonia Oak	—		D	S. Eur., S.W. Asia
lyrata	Over Cup O.	—		W	S.E: U.S.A
catesbaei	Turkey O.	—		W	N. America
texana	Texas Red O.	—		W	,,
dentata	Jap Silkworm O.	? 48	H. J. Sax 1930	Fo$_1$W	Jap., Kore China

164. CASUARINACEAE

CASUARINA $x=9, 12$

stricta	Coast Casuarina	18	Sugiura 1936	HSbW	Australia
torulosa	She-Oak	18	Milovidov 1941	HW	,,
equisetifolia	Horsetail Tree	24	Wetzel 1929	HSbW	Mal., Pac. I
montana		24	,, ,,	W	Malay
cunninghamiana	Austr. Pine	—		W	Australia
distyla		—		W	,,
fraseriana	Frazer Beefwood	—		W	,,
glauca		—		W	,,
suberosa	Erect Beefwood	—		W	,,

165. ULMACEAE

ULMUS $x=7$

carpinifolia (*foliacea*)	Smooth-leaf E.	28	Sax 1933a	W	Eur., S.W. Asia
as *nitens*		28	Maude 1940		
glabra	Scotch Elm			W	Eur., N. A
v. *montana*		28	Liliveld 1933		
v. *scabra*		28	Sax 1933a		

ULMUS (*cont.*)

hollandica	Dutch Elm	28	Sax 1933a	—	*cult*
fulva	Slippery Elm	28	„ „	MW	N. America
japonica	Japanese E.	28	„ „	W	E. Asia
laciniata	Manchurian E.	28	„ „	W	„
laevis (*pedunculata*)	Russian E.	28	„ „	W	Eur. Cauc.
procera (*campestris*)	English Elm	28	„ „	W	Eur., N. As.
pumila	Siberian E.	28	Liliveld 1933	W	N. Asia
racemosa	Rock Elm	28	Sax 1933a	W	N. America
americana	White or Amer. Elm	28 56	Krause 1930b Sax 1933a	W	„

HOLOPTELEA (ULMUS) $x=7$

integrifolia		28	Capoor 1937	W	India

CELTIS $x=7$

occidentalis		28	Sax 1933a	Fs	E:N. Amer.
australis	Hackberry	—		FoW	Eur., Asia

ZELKOVA $x=7$

serrata	Keaki	28	Sax 1933a	W	Japan

167. MORACEAE

DORSTENIA $x=6, 7, 8.$ $x_2=(6+7), (7+8)$

barteri		24	Krause 1930	—	Trop. Africa
convexa		24	„ „	—	„
yambuyaensis		24	„ „	—	„
plumariaefolia		26	„ „	—	Brazil
erecta		28	„ „	—	„
contrajerva	Contrayerva	30	„ „	HM	Trop. Amer.
argentata	Brazilian C.	32	„ „	M	Brazil
scabra		40	„ „	—	Trop. Africa
manni		48	„ „	—	„

BROSIMUM $x=13$

alicastrum	Breadnut	26	Krause 1930	(V)	Trop. Amer.
utile	Cow Tree	—		B	S. & C. Am.

BROUSSONETIA $x=13$

papyrifera	Paper Mulberry	26	Sugiura 1931, Bowden 1940a	T	Mal., Pac. Is.
kazinoki		—		T	Japan

FICUS $x=13$

asperrima	Sandpaper F.	26	Condit 1933	ToW	India
benghalensis	Banyan	26	„ „	FoShW	Ind., Tr. Af.
benjamina		26	„ „	FoSh	Trop. Asia
calophylloides		26	„ „		Philippines
carica	Fig	26	„ 1928	FM	Med., *cult*
diversifolia	Mistletoe F.	26	„ 1933	Fo	Malaya
eugenoides	Eugenia F.	26	„ „		Australia

FICUS (*cont.*)					
elastica	India-rubber T.	26	Sugiura 1936	Ru	Trop. Asia
glabella	Smooth F.	26	Condit 1933	(V)Ru	Him., Bur Mal.
glomerata	Cluster F.	26	" 1928	F	Ind., Burm
henneana		26	" 1933	—	Australia
indica	Indian F.	26	" "	Fo$_1$W	Tr. As., Mal
macrophylla	Moreton Bay F.	26	" 1928	—	Australia
mitrophora		26	" "	Sh	W. Indies
mysorensis	Mysore F.	26	" "	Sh	India
palawanensis		26	" "	T	Philippines
pandurata (*lyrata*)	Riddle-leaf F.	26	" "	—	China
papaya		26	" "	—	Malaya
platypoda		26	" "	—	Australia
populnea (*brevifolia*)		26	" "	—	S. America
pseudocarica	Abyss. F.	26	" "	—	Abyssinia
pumila	Ok-gue	26	" "	FH	Jap., China
religiosa	Peepel T.	26	" 1933	HFo$_1$Fo$_1$	India
retusa	India Laurel	26	" "	MRu	India, Mal.
scabra	Rough F.	26	" "	T	New Heb.
subscabrida		26	" "	—	W. Indies
ulmifolia	Elm leaf F.	26	" "	—	Malaya
vogelii	Abba T.	26	" "	Ru	Trop. Afric
watkinsiana		26	" "	—	Australia
laccifera		—		Fo$_1$	Malaya
tinctoria		—		D	Society Is.
sycamorus		—		FW	Egypt
CASTILLOA $x=14$					
elastica	Panama Rubber	28	E.K.J.	Ru	Mex. T. Am
CECROPIA $x=14$					
palmata	Silverleaf S.	28	Krause, T. 1931	—	Brazil
peltata	Indian S.	28	" "	(V)W	Trop. Ame
obtusa	Snakewood	—		M	Brazil
ARTOCARPUS $x=14$					
cannoni		28	Krause, T. 1931	H	S. Sea Is.
communis	Bread Fruit	56	E.K.J.	TV	Mal., Pac. I
integra	Jack Fruit	56	"	FFoN ReW	India, Mal.
champeden	Chempedak	—		FNW	Malaya
gomezianus	Tampang	—		F	"
griffithii		—		F	Sarawak
hirsuta	Ayani	—		FW	E. Indies
nobilis	Wild Breadfruit	—		FN	Ceylon
lakoocha	Lacoocha	—		F	India
odoratissimus	Marang or Johore Jack	—		FW	Philippines
rigidus	Tampuni Monkey-jack	—		FW	Mal., Burm

MORUS *x*=14					
acidosa		28	Osawa 1920	F	Trop. Asia
atropurpurea		28	,, ,,	F	Temp. Asia
bombycis		28	Sinoto 1929	FFo$_1$	Temp. Asia
indica	Silk Mulberry	28	Tahara 1910	FFo$_1$	Trop. Asia
kagayamae		28	Osawa 1920	Fo$_1$	Japan
multicaulis	Downing M.	28	,, ,,	F	N. America
alba	White M.	28	,, ,,	FFo$_1$TV	Temp. Asia
v. *makado*		42	,, ,,		
(*atropurpurea* × *alba*)					
nigra	Black M.	308	Thomas, Darlington & L. C. 1942	FFo$_1$W	Persia, *cult*
rubra	Red M.	—		F	E. U.S.A.
CUDRANIA *x*=14					
triloba		56	Sinoto 1929	FD	Jap.—Aus.
javanica		—		F	Trop. Asia
ANTIARIS					
toxicaria	Upas Tree	—		MT	Ind., Ceylon
CHLOROPHORA					
tinctoria	Old Fustic	—		DM	Central Am.
excelsa	Odom T.	—		W	Trop. Africa
MACLURA					
aurantiaca	Osage Orange	—		FH	N. America
TRECULIA					
africana	Bread Nut T.	—		N	W. Afr.

169. URTICACEAE

PARIETARIA *x*=7, 13					
officinalis (*ramiflora*)	Pellitovy	14	Krause 1930	M(V)	S. Eur., S.W. Asia
judaica		26	,, ,,		Greece
BOEHMERIA (URTICA) *x*=7, 13					
biloba		28	Krause 1930	—	Japan
nivea	Rhea Fibre, Ramie	28	Krause, T. 1931	T	Trop. Asia
argentea		52	,, ,,	T	Mexico
rugulosa		—		W	Ind., Burma
URTICA *x*=11, 12, 13					
membranacea		22 24	Fothergill 1936 Negodi 1930	—	Medit.
urens	Dog Nettle	24 24, 26, 52	Meurman 1925 L. & L. 1942a	T	N. Temp.
atrovirens		26	Fothergill 1936	T	S. Europe
grandidendata		26	,, ,,	T	Java
pilulifera	Roman N.	26	Krause 1931	T	Med.—Ind.
dioica	Common Stinging N.	52 48	Fothergill 1936 Meurman 1925 L. & L. 1942a	VMT	N. Temp.
cannabina		52	Fothergill 1936	T	A. M., Pers.

DEBREGEASIA					
hypoleuca		—		T	India
GIRARDINA					
heterophylla	Nilgiri Nettle	—		T	Ind., Mal.
LAPORTEA					
crenulata	Devil Nettle	—		T	Trop. Asia
MAOUTIA					
pinja		—		T	Burma, Him
POUZOLZIA					
tuberosa		—		M	E. Indies

170. CANNABINACEAE

HUMULUS $x=8, 10$					
japonicus		♀ : $14+XX$	Kihara & H. 1932	T	Jap., China
		♂ : $14+XY_1Y_2$			
lupulus	Hop	♀ : $16+X_1X_1X_2X_2$	„ 1929	B	Eurasia
		♂ : $16+X_1X_2Y_1Y_2$	Ono 1937		
americanus		—		—	N. America
CANNABIS $x=10$					
sativa L	Hemp	20	Medvedeva 1935	MTO	C. As., Him
	Ganja	(40)	Furusato 1940		

171. AQUIFOLIACEAE

ILEX $x=9, 10$					
verticillata	Winterberry	36	Jensen 1943	M	N. America
opaca	Amer. H.	36	„ „	H	„
aquifolium	Holly	40	Maude 1940	HMW	Eur., W. As.
paraguensis	Mate, Par. Tea	40	E.K.J.	B	Brazil
vomitoria etc	Yapon Tea	40	Jensen 1943	B	S.E: U.S.A.

172. EMPETRACEAE

EMPETRUM $x=13$					
nigrum ♂ ♀	Crowberry	26	Wanscher 1933b	F	Eur.,N. Asia
v. *hermaphroditum*		52	Hagerup 1927		Arctic
COREMA $x=13$					
album		26	Hagerup 1941a	—	Portugal

173. CELASTRACEAE

EUONYMUS $x=8$					
fortunei (*radicans*)		32	Bowden 1940a	H	China, Jap.
japonicus	Jap. Sp. Tree	32	Sugiura 1931	HV	„
europaeus	Spindle Tree	64	Wulff 1937b	HRu	Eur., A. Min.
americanus	Strawberry Bush	64	Bowden 1940a	H	S.E: U.S.A.
PACHYSTIMA $x=8$					
canbyi		32	Bowden 1940a	—	Virginia
CELASTRUS $x=23$					
scandens	Waxwork	46	Bowden 1940a	H	E:N. Amer.

ATHA					
dulis	Khat, Arabian Tea	—		B	Ar., Abyss.
OKOONA					
eylanica	Kokoon Tree	—		T	Ceylon

180. SALVADORACEAE

ALVADORA					
ersica	Mustard Tree	—		FoToV	Ind.—Arab.

182. OLACACEAE

NACOLOSA					
uzonensis		—		NW	Philip. Is.
IMENIA					
mericana	Tallow Wood T.	—		FO	Trop. Amer.

185. LORANTHACEAE

ORANTHUS (SCURRULA, DENDROPHTHORA) $x=8, 9$					
tropurpureus		16	Rauch 1936	Par	Ind., Mal.
entandrus		16	,, ,,	Par	Java
ongiflorus		18	Kumar & A. 1942b	Par	Mal.—Aust.
ISCUM $x=10, 12$					
lbum	Mistletoe	20	Steindl 1935	MPar	Eur., T. As.
rticulatum		24	,, ,,	Par	Trop. Austr.
UYTSIA					
loribunda	Flame T.	—		Re	W. Austr.

186. SANTALACEAE

ANTALUM $x=10$					
lbum	Indian Sandalwood	20	G. S. Iyengar 1937	ParMPW	Ind. Malaya
asi	Fiji S.	—		W	Fiji
reycinetianum	Sandwich Isle S.	—		W	Hawaii
HESIUM $x=10, 12$					
ightianum		20	L. N. Rao 1942	ParW	India
ontanum		24	Schulle 1933		Europe
UCKLEYA $x=15$					
pan		30	Nakajima 1937b	Par	Japan
SYRIS $x=10, 15$					
rborea	Bischar Tea	30	L. N. Rao 1942	BM	India
lba		40	Schaeppi & S. 1937		Medit.
OLPOON					
ompressum	Cape Sumach	—		D	S. Africa
UCARYA					
picata	Austr. Sandal.	—		ParOP To	W. Austr.

189. BALANOPHORACEAE

BALANOPHORA $x=?$ [Apomixis]					
dioica		c. 18	Panje 1934	Par	Ind., Burma
japonica		94-112	Kuwada 1928	Par	Japan
elongata		—		ParO	Java
CYNOMORIUM $x=12$					
coccineum		24	Juel, T. 1927	ParM	Medit.

190. RHAMNACEAE

RHAMNUS $x=10, 12, 13$					
frangula	Alder Buckthorn	20 26	Rutland 1941 Wulff 1937b	HMW	Eur., N. As N. Africa
catharticus	Purging B.	24	,, 1939a	DHM	Eur., N. As N. Africa
chlorophora	Green Indigo	—		D	E. Eur., A. Minor
purshiana	Cascara Sagrada	—		M	N. America
infectoria	Avignon Berry	—		D	S. Europe
tinctoria	Chinese Green Indigo	—		D	China, Sib
HOVENIA $x=12$					
dulcis	Raisin Tree	24	Sugiura 1936b	F	Him.—Jap
CEANOTHUS $x=12$					
americanus	New Jersey Tea	24	Bowden 1940a	B	E: U.S.A.
thyrsiflorus	Blue Blossom	—		H	W: U.S.A.
ZIZYPHUS $x=12, 13$					
jujuba	Indian Jujube	24	Morinaga *et al.* 1929	FWFo$_1$	Ind., Malay
sativa	Chinese J.	24	,, ,,	F	Med., Chi
as *vulgaris*		26	Chiarugi 1930b		
lotus	Lotus J.	—		F	Medit.

191. ELAEAGNACEAE

ELAEAGNUS $x=7$ or 14					
angustifolia	Trebizond Date	12? 28	Sobolewska 1926 Fyfe unp.	FB	Eur., N. A
argentea	Silverberry	28	,,	F	N. Americ
pungens		28	,,	F	Japan
umbellata		28	,,	F	,,
latifolia	Oleaster	—		F	Trop. Asi
multiflora	Gumi	—		F	Japan
perrottetii	Philippine O.	—		F	Philip. Is.
HIPPOPHAE $x=10, 12$					
rhamnoides	Sea Hawthorn	20 24	Sobolewska 1926 Fyfe, unp.	H	Eur., T.
salicifolia	Sea Buckthorn	—		F	Nepal

SHEPHERDIA $x=11, 13$					
canadensis	Russet Buffalo-berry	22	Cooper 1932	FBN	N. America
argentea	Silver B.	26	Fyfe unp.	F	„

193. AMPELIDACEAE (VITACEAE)

CISSUS $x=16?$					
gongyloides		32	Langlet 1927b	H	Brazil, Peru
quadrangularis		*c.* 45	Ghimpu 1929b	VMVit	Asia, Tr. Af.
VITIS $x=19, 20$					
amurensis	Amur Grape Vine	38	Nebel 1929	F	Amur
arizonica	Canyon G. V.	38	Christoff 1929	F	Ariz., Mex.
berlandieri	Winter G. V.	38	Sax 1929	F	Texas, New Mexico
californica	California G. V.	38	Kobel 1929a	F	California
candicans	Mustang G. V.	38	Sax 1929	F	N. America
cinerea	Sweet Winter G. V.	38	Kobel 1929ab	F	E. Ind., China, Jap.
coignetiae	Glory G. V.	38	Nebel 1929	—	Japan
doniana	Doan G. V.	38	„ „	—	N. America,
labrusca	Fox G. V.	38	„ „	F	*cult*
lecontiana		38	Sax 1929	—	„
lincecumii	Post-Oak G. V.	38	Christoff 1929	—	S.C: U.S.A.
longii (*solonis*)	Bush G. V.	38	Sax 1929	—	„ „
monticola	Sweet Mountain G.V.	38	Christoff 1929	F	N. America
as *rubra*	Cat G. V.	38	„ „		
riparia	Riverbank G. V.	38	„ „	F	E:N. Amer.
rupestris	Sand G. V.	38	„ „	—	Texas
treleasii		38	Sax 1929	—	N. America
vulpina	Frost G. V.	38	Nebel 1929	F	„
as *cordifolia*		—			
vinifera	Grape Vine	38, 57, 76	Olmo 1937	ABF	S.W. Asia (*cult*)
rotundifolia	Muscadine	40	Branas 1932	F	Del.—Mex.
aestivalis	Summer G. V.	—		—	N. America
PARTHENOCISSUS $x=20$					
quinquefolia	Virginia Creeper	40	Sax 1929	H	E:N. Amer.
tricuspidata	Boston Ivy	40	„ „	H	China, Jap.
AMPELOPSIS $x=20$					
cordata		40	Sax 1929	—	N. America
vitifolia		40	Christoff 1929	—	Pers., Afgh.

194. RUTACEAE

AEGILOPSIS $x=9$					
chevaliere		18	Longley 1925	—	Guinea

AFRAEGLE $x=9$					
gabonensis		18	Krug 1943	—	Congo
ATALANTIA $x=9$					
citroides		18	Krug 1943	HFs	Indo-China
BOENNINGHAUSENIA $x=9$					
albiflora (*japonica*)	China Rue	18	Sugiura 1936a	M	Him., Japan
CLAUSENA (COOKIA) $x=9$					
lansium (*punctata*)	Wampee	18	Krug 1943	F	China
FERONIA $x=9$					
limonia	Wood Apple	18	Toxopeus 1933	FReW	Ind., Bur., Cey.
MURRAYA $x=9$					
koenigii	Curryleaf	18	E.K.J.	Sp	E. Indies
paniculata	Jasmin Orange	18	Toxopeus 1933	PSp	Trop. Asia Austr.
exotica	Boxwood	—		HW	Tr. As., Austr., Pol
MICROCITRUS (CITRUS) $x=9$					
australasica		18	Krug 1943	—	Australia
CITRUS $x=9$ [Apomixis]					
v. *bergamia*	Bergamot	18	Nakamura 1934	FP	”
aurantium	Seville Orange	18	Sugiura 1931	FsP	Trop. Asia
aurantifolia	Acid Lime	18	Longley 1925	FP	”
	Tahiti Lime	27	Bacchi 1940,		
		27	Krug & B. 1943		
celebica		18	Krug 1943	—	E. Indies
deliciosa		36	Lapin 1937	F	Trop. Asia
depressa		18	Nakamura 1934	—	Formosa
grandis	Pummelo	18, 36	Frost, Krug 1943	F	Java
hystrix	Sattora	18	Krug 1943	P	Ind., Mala
ichangensis		18	” ”	—	China, Ass
junos		18	Nakamura 1934	—	Trop. Asia
kotokan		18	” ”	—	—
limetta	Sweet Lime	18	” ”	FsP	Trop. Asi
limon (*limonia*)	Common Lemon	18, 36	Krug 1943	FVit	*cult*
“ *limonia* ”	Kusaie Lime Jap. Citron	18	Nakamura 1934	FP	Trop. Asi
macroptera		18	Krug 1943	—	N. Caled.
maxima	Shaddock	18, 36	Lappin 1937a	F	Trop. Asi
medica	Citron	18	Longley 1925	FMPV	”
medioglobosa		18	Nakamura 1934	—	Japan, *cu*
microcarpa (*japonica*)		18, 36	” ”	F	”
mitis	Calamondin	18	Longley 1925	F	*cult*
natsudaidai		18, 27, 36	Lapin 1937a	F	Japan

CITRUS (*cont.*)					
nobilis	Tangerine, Mandarin O.	18	Nakamura 1934	FPVit	China, *cult*
"obovata"		18	,, ,,	F	*cult*
paradisi	Grape Fruit	18, 27, 36	Lapin 1937a	F	E. Asia
pyriformis	Ponderosa Lemon	18	Nakamura 1934		Java
reticulata	Dancy Tangerine	18 18, 36	Longley 1925, Frost, Krug 1943	F	*cult*
sinensis	Sweet O.	18, 27, 36 45	Lapin 1937a Krug 1943	FVit	China, *cult*
tachibana (*leiocarpa*)		18	Nakamura 1934	F	Japan, Korea
tamurana		18	,, ,,	F	Japan
unshiu	Satsuma O.	18, 36	Lapin 1937a	FP	,,
webberi		18	Krug 1943		Philip. Is.
TRIPHASIA $x=9$					
trifolia	Chinese Lime	18 36	Longley 1925 Krug 1943	F	Trop. Asia
FORTUNELLA $x=9$					
crassifolia	Cumquat	18	Longley 1925	F	China
japonica	Round C.	18	,, ,,	F	Jap., China
margarita	Oval C.	18	Lapin 1937a	F	,,
hindsii	Cumquat	18, 36	Longley 1925	F	China
PONCIRUS $x=9$					
trifoliata	Trifoliate O.	18 18, 36	Longley 1925 Lapin 1937a	FP	Japan
RUTA $x=9$					
patavina		18	Cappelletti 1929	M	S. Europe
graveolens	Rue	81	Revell unp.	MP	,,
AEGLE $x=9$					
marmelos	Bael T.	36	E.K.J.	DFM	India
ZANTHOXYLUM (XANTHOXYLUM) $x=?$					
americana	Prickly Ash	68	Walker 1942	W	N. America
piperitum	Jap. Pepper Tree	70	Nakajima 1937b	OSp	China, Jap.
clava-herculis	Hercules' Club	*c.* 72	Bowden 1940a	W	S.E. U.S.A.
flavum	W. Ind. Satin W.	—		W	W. Indies
alatum		—		MSp	India
AMYRIS					
balsamifera	Elemi	—		Re	Jamaica
elemifera		—		Re	W. Indies
BAROSMA					
betulina	Buchu	—		M	S. Africa
serratifolia		—		M	,,
crenulata		—		M	,,
CASIMOROA					
edulis	Mexican Apple	—		F	Mexico

CALODENDRON					
capense	Cape Chestnut	—		HOW	S. Africa
GALIPEA					
officinalis	Cusparia	—		M	Venezuela
PILOCARPUS					
jaborandi	Jaborandi	—		M	Brazil
microphyllus		—		M	,,
pennatifolius	Jaborandi	—		M	Trop. Am.
TODDALIA					
aculeata	Todali	—		(F)M	India

195. SIMARUBACEAE

QUASSIA *x*=9?					
amara	Surinam Quassia	36	E.K.J.	M	Guiana
PICRASMA *x*=?					
excelsa	Jamaica Q.	*c*. 60	,,	M	W. Indies
IRVINGIA					
gabonensis	Dika Nut T.	—		FON	W. Africa
SIMABA					
cedron	Cedron	—		M	C. America
SIMARUBA					
amara	Marupa	—		MW	Brazil

196. BURSERACEAE

BURSERA					
delpechiana	Linaloe	—		P	Mexico
simaruba	Gommier	—		ReW	C. Amer., W. Indies
CANARIUM					
commune	Kanari, Java Almond	—		NO	Moluccas
strictum	Black Damar	—		MRe	India
COMMIPHORA					
africana	Bdellium Plant	—		M	Abyssinia
opobalsamum	Balm of Gilead	—		MRe	Arabia
myrrha	Myrrh	—		MP	Somaliland
BOSWELLIA					
aloexylon	Mexican Linaloe	—		Re	Arabia
carteri	Frankincense	—		MP	Somal., Abys.
frereana	African Demi	—		Re	Trop. Afr.
serrata	Indian F.	—		Re	India
GARUGA					
pinnata		—		F	India, Ma

PROTIUM					
carana	Carana Gum	—		M	Trop. Amer.
heptaphyllum		—		M	”

197. MELIACEAE

DYSOXYLUM *x*=?					
ramiflorum		*c.* 72	Paetow 1931	W	Java
CEDRELA					
toona	Toona	—		W	India, Bur.
odorata	West Ind. Cedar	—		W	Trop. Amer., W. Indies
CHICKRASSIA					
tabularis	Chittagong Wood	—		DMW	India
CHLOROXYLUM					
swietenia	Satin-wood	—		W	India
FLINDERSIA					
oxleyana	Yellow-wood	—		W	Australia
LANSIUM					
domesticum	Langsat	—		F	Malay
MELIA					
azedarach	Persian Lilac (of India)	—		MOW	Himalayas
azadirachta	Margosa, Neem	—		DMOW	India
SWIETENIA					
mahagoni	Mahogany	—		W	C. America
macrophylla	Mexican M.	—		W	”
WALSURA					
piscidia		—		MW	E. Indies

198. SAPINDACEAE

CARDIOSPERMUM *x*=11					
halicacabum	Heart Seed	22	Sugiura 1936b	H(V)	Tropics
KOELREUTERIA *x*=15					
paniculata		30	Eichhorn & F. 1936	NV	China
LITCHI *x*=14, 15					
chinensis	Lichi	28	Chaudhuri 1940	F	China
		30	E.K.J.		
AESCULUS *x*=20					
parviflora	Common B.	40	Dobrenz 1935	N	N. America
flava (octandra)	Yellow Buckeye	40	Upcott 1936b	HSh	N. America
hippocastanum	Horse Chestnut	40	” ”	Sh	Asia Minor
pavia	Red B.	40	” ”	H	”
plantierensis (carnea × hippo)		60	” ”	HSh	*cult*
carnea (pavia × hippo)	Red C.	80	” ”	H	*cult*
indica	Indian H.C.	—		HW	India

BLIGHIA					
sapida	Akee	—		F	W. Afr.
MELICOCCA					
bijuga	Mamoncillo	—		F	Trop. Amer.
NEPHELIUM					
chryseum	Pulassau	—		F	Borneo
lappaceum	Rambutan	—		F	Malaya
eriopeltatum	Wild R.	—		FW	„
PAULLINIA					
cupana	Guarana	—		BN	Venezuela
yoco	Yocco	—		BM	N.E: S. Amer.
SAPINDUS					
mukorossi	N. Ind. S. N.	—		M	India
saponaria	Soap-nut	—		M	Trop. Am.
trifoliatus	S. Ind. S. N.	—		M	India
SCHLEICHERA					
oleosa (trijuga)	Kosumba	—		Fo$_1$OW	Ind., Malaya
HARPULLIA					
pendula	Tulip Wood T.	—		W	Australia

200. ACERACEAE

ACER $x=13$					
campestre	Hedge Maple	26	Foster 1933	HW	Eur., W. Asia
circinatum	Vine M.	26	„ „	HW	N. America
griseum	Paper Bark M.	26	„ „	HW	W. China
mandschuricum	Manchurian M.	26	„ „	HW	Manchuria
miyabei	Miyabei M.	26	„ „	HW	Japan
negundo	Box Elder	26	„ „	HW	N. America
nikoense	Nikko M.	26	„ „	HH	Japan
palmatum	Japanese M.	26	„ „	HW	„
pseudosieboldianum		26	„ „	HW	Manchuria Korea
rufinerve	Red-vein M.	26	„ „	HW	Japan
saccharum	Sugar M.	26	Taylor 1920	SuW	N. America
tschonoskii		26	Foster 1933	HW	Japan
argutum		26	Takizawa 1940	H	Japan
cissifolium		26	„ „	H	„
diabolicum		26	„ „	H	„
japonicum		26	„ „	H	„
mono (pictum)	Painted M.	26	„ „	H	China
platanoides	Norway M.	26, 39	Meurman 1933	Su	Eur., S.W. Asia
carpinifolium	Hornbeam M.	*c.* 52	Taylor 1920	HW	Japan
saccharinum (dasycarpum)	Silver M.	52	„ „	HSu	N. America

ACER (*cont.*)					
pseudoplatanus	Sycamore	52	Foster 1933	(A)(Su) W	Eur., S.W. Asia
rubrum	Red M.	78, 104	Duffield 1943	HW	N. America
tataricum	Tartarian M.	—		H(V)	S.W. Asia
nigrum	Black M.	—		W	N. America
spicatum	Mountain M.	—		HW	„

201. SABIACEAE

SABIA *x*=12					
japonica		24	Sugiura 1936a, b	H	Japan
OPHIOCARYON					
paradoxum	Snake Nut T.	—		H	Br. Guiana

204. STAPHYLACEAE

STAPHYLEA *x*=13					
bumalda	Bladder Nut	26	Foster 1933	H	Japan
pinnata	„ „	26	„ „	H	Eur., W. As.
colchica	„ „	52	„ „	H	Caucasus
trifolia	„ „	78	„ „	H	N. America

205. ANACARDIACEAE

RHUS *x*=15?					
toxicodendron	Poison Ivy	30	Grimm 1912	M	N. America
succedanea	Jap. Vegetable Wax	30	Sugiura 1936b	O	Jap., China, Him.
copallina	Dwarf Sumach	—		D	N. America
coriaria	Sicilian S.	—		D	Med., Pers.
verniciflua	Jap. Lacquer Tree	—		ReO	Tibet—Jap.
glabra	Smooth Sumac	—		D	N. America
pentaphylla	Tizari	—		D	N. Africa
typhina	Staghorn S.	—		D	N. America
semialata (*chinensis*)	Chinese Gall T.	—		D	China
SPONDIAS *x*=16?					
mangifera	Hog Plum	32	Banerji 1936	FV	Trop. Asia
purpurea	Spanish P.	—		F	Trop. Amer.
MANGIFERA *x*=? [Apomixis]					
indica	Mango	40 *c.* 52	E.K.J. Maheshwari 1934	FVitW	India, Mal.
altissima	Jungli M.	—		FW	E. Indies
caesia	Binjai	—		FW	N. Borneo
foetida	Horse Mango	—		FW	Malaya
SEMECARPUS *x*=15?					
anacardium	Marking Nut T.	60	E.K.J.	D	Trop. Asia & Austr.
ANACARDIUM *x*=?					
occidentale	Cashew Nut T.	42	E.K.J.	AFN Vit	Trop. Amer.

BOUEA						
burmanica	Miriam Mango	—			F	Bur., Mal.
macrophylla	Kundangau	—			F	Malay
BUCHANANIA						
lanzan	Cuddapah Almond	—			NW	Ind., Bur.
sessilifolia		—			FW	Bur.—Mal.
MELANORRHOEA						
usitata	Burmese Lacquer T.	—			DRe	Burma
LANNEA (ODINA)						
grandis (*wodier*)		—			DReW	India, Bur.
PISTACEA						
acuminata		—			Re	Egypt—Him.
cabulica	Bombay M.	—			Re	Baluchistan
lentiscus	Mastic	—			MP Re	Medit.
terebinthus	Chian Turpentine T.	—			DRe	E. Eur., Med.
vera	Pistachio Nut	—			N	*cult*, Turkest.

206. CONNARACEAE

CONNARUS						
guianensis	Zebra Wood	—			W	Br. Guiana
ROUREA						
santaloides		—			T	India, Cey.

207. JUGLANDACEAE

CARYA $x=16$						
illinoensis (*olivaeformis*)	Pecan	20-24?	Woodworth T.	1931	NO	N. America
cordiformis	Bitternut	32	”	1930c	H	N. America
laneyi		32	”	”	W	”
laciniosa	King Nut	32	”	”	N	”
ovata	Shagbark Hickory	32	”	”	W	”
alba	Mokernut	64	”	”	WN	”
glabra	Pignut	64	”	”	DW	”
ovalis	False Shagbark	64	”	”	W	”
tomentosa	Hickory	64	”	”	N	”
JUGLANS $x=16, 17$						
cinerea	Butternut	32	Woodworth	1930c	NWVit	N. America
intermedia		32	McKay & H.	1941	N	N. As., Him.
mandschurica	Manch. W.	32	Woodworth	1930c	W	Manchuria
nigra	Black W.	32	”	”	WNVit	N. America

JUGLANS (*cont.*)

regia	English W.	32	Woodworth 1930c	NOW Vit	N. As., Him.
rupestris	Texas Black W.	32	” ”	W	W:N. Amer.
sieboldiana	Giant W.	32	” ”	NW	Japan
californica	Cal. Black W.	34	Babcock 1915	W	California
notha		32	Woodworth 1930c	HW	*cult*
cathayensis	Chinese W.	—		NVit	China

PTEROCARYA $x=16$

fraxinifolia	*c.* 32	Woodworth 1930c	HW	Cauc.—Per.
stenoptera	*c.* 32	” ”	HW	China
rehderiana (*fraxinifolia* × *sten*)	32	” ”	HW	*cult*

209. CORNACEAE

AUCUBA $x=8$

chinensis	16	Kihara & Y. 1935	H	China
japonica	32	Meurman 1929b	H	Him.—Jap.
	32+2ff	Yamamoto 1937		
himalaica	—		H	E. Himalayas

COROKIA $x=9$

cotoneaster	18	Wanscher 1933a	H	New Zeal.

GRISELINIA $x=9$

littoralis	36	Wanscher 1933a	H	New Zeal.

MACROCARPIUM (CORNUS) $x=9$

mas	Cornelian Cherry	18	Dermen 1932b	HW	Balk., S.W. Asia
officinalis		18	Sugiura 1936b	H	China, Japan
chinensis		—		H	W. China
sessilis		—		H	W: U.S.A.

CORNUS $x=10, 11$

alternifolia	Pagoda Dogwood	20	Dermen 1932b	H	N. America
controversa		20	” ”	H	Him.—Jap.
alba	Tartarian D.	22	” ”	H	N. Asia
amomum	Silky D.	22	” ”	H	N. America
arnoldiana		22	” ”	H	*cult*
asperifolia	Rough-leaved D.	22	” ”	H	E: N. Amer.
bretschneideri		22	” ”	H	*cult*
coreana		22	” ”	H	Korea
glabrata		22	” ”	H	N. America
obliqua		22	” ”	H	Quebec—Kans.
paucinervus		22	” ”	H	C. China
racemosa (*paniculata*)		22	” ”	H	N. America
rugosa (*circinata*)		22	” ”	H	”
sanguinea	Blood Twig D.	22	” ”	HW	Eur., N. & W. Asia
stolonifera	Red Osier D.	22	” ”	H	N. America

CYNOXYLON (CORNUS) $x=11$					
floridum	Flowering D.	22	Dermen 1932b	HMW	E: U.S.A.
nuttallii		—		HW	W: U.S.A.
DENDROBENTHAMIA (CORNUS) $x=11$					
capitata		22	Wanscher 1933b	H	Him., China
japonica (*kousa*)	Kousa	22	Dermen 1932b	H	China, Jap.
CHAMAEPERICLYMENUM (CORNUS) $x=11$					
suecica		22	Wulff 1939b	H	Arctic
canadense	Bunch Berry	44	Dermen 1932b	H	N. Temp.
AFROCRANIA (CORNUS)					
volkensii		—		H	Kenya

210. ALANGIACEAE

ALANGIUM (MARLEA) $x=11$					
begonifolium		22	Wanscher 1933a	H	Ind.—Jap.

211. NYSSACEAE

DAVIDIA $x=?$					
involucrata		*c.* 40	Dermen 1932b	H	China
NYSSA $x=11$					
sylvatica	Black Tupelo	44	Dermen 1932b	H	S.E:U.S.A.

212. ARALIACEAE

FATSIA (TETRAPANAX) $x=12$					
japonica	Rice-paper Plant	24	Sugiura 1931	HT	Japan, For.
papyrifera		—		T	China, Japan
ARALIA $x=12$					
filicifolia		24	Wanscher 1933a	HM	Pacific Is.
caschmiriana		48	„ „	HM	*cult*
quinquefolia	Amer. Ginseng Root	—		HM	N. America
nudicaulis	Virginian Sarsaparilla	—		HM	„
PANAX $x=11, 12$					
fruticosa	Ginseng	24	Wanscher 1933a	H	Trop. Asia
japonicum	Jap. G.	24	M. & S. 1935	HM	Japan
ginsing	Chinese G.	44	Sugiura 1936a	HM	Manch., Korea
HEDERA $x=11$					
helix	English Ivy	*c.* 44, 88	Oehm 1924	HM	Eur., N. Af., Asia
colchica	Colchis Ivy	*c.* 120	Wanscher 1933a	H	Cauc., Pers.

ACANTHOPANAX (KALOPANAX) $x=?$					
aculeatus		c. 54	Wanscher 1933a	—	E. Asia
sessiliflorus		c. 54	„ „	H	N. China
leucorhizus		c. 127	„ „	—	E. Asia
sciadophylloides		—		T	Japan
HELWINGIA $x=12$					
rusciflora (*japonica*)		c. 72, 144	Wanscher 1933a	H	Japan

213. UMBELLIFERAE

CAUCALIS $x=6, 10$					
leptophylla		12	Wanscher 1932	—	Eur., Medit.
daucoides	False Carrot	20	„ „	—	Eur., Asia
latifolia		c. 32	„ „	—	„
ASTRANTIA $x=7$					
helleborifolia		14	Wanscher 1932	—	Caucasus
major		14	„ „	H	Europe
PETAGNIA $x=7$					
saniculifolia		42	Wanscher 1933a	—	Sicily
ERYNGIUM $x=7, 8$					
campestre	Eryngo	14	Tamamschjan 1933	M	Europe
maritimum	Sea Holly	16	Wulff 1937a	HR	Eur., A.Min.
pandanifolium etc.		48	Wanscher 1933a	—	Brazil
yuccaefolium		c. 96	„ „	—	E. U.S.A.
BUPLEURUM $x=7, 8$					
fruticosum	Shrub Thorowax	14	Wanscher 1933a	M?	Medit.
candollii		16	„ 1932	—	Himalayas
longifolium		16	„ 1931	—	Europe
rotundifolium	Roundleaf Th.	16	Tamamschjan 1933	Sp	„
		22?	Melderis 1930		
HACQUETIA $x=8$					
epipactis		16	Wanscher 1933a	H	Europe
SANICULA $x=8$					
europaea	Sanicle	16	Wanscher 1931	M	Eur., N. As.
SCANDIX $x=8$					
pecten-veneris	Shepherd's Needle	16	Wanscher 1931	—	Eur., S.W. Asia
grandiflora		—		Sp	E. Eur., A.M.
ANTHRISCUS $x=7, 8, 9$					
tenerrimus		14	Wanscher 1933a	—	Gr., A.M.
sylvestris	Wild Chervil	16	„ 1931	—	Eur., N. As.
fumarioides		16	„ „	—	Europe
		18	Schulz-Gaebel, T. 1931		
cerefolium	Chervil	18	Wanscher 1931	Sp	Eur., S.W. & N. Asia
vulgaris		18	„ „	—	Eur.,—Pers.

HYDROCOTYLE $x=8$					
moschata		c. 36	Tamamschjan 1933	—	New. Zeal.
		48	Wanscher 1932		
novae-zeelandiae		48	„ 1933a	—	New Zeal.
umbellata		48	„ 1932	—	O.W. Trop.
vulgaris		c. 96	„ „	—	Europe
asiatica		—		MV	Trop., Sub-Trop., Asia
sibthorpioides		—		V	S.E. Asia
CONIUM $x=8, 11$					
maculatum	Poison Hemlock	16	Nordheim 1930	M	Eur., S.W. Asia
		22	Wanscher 1932		
DAUCUS $x=8, 9, 10, 11$					
muricatus		16	Wanscher 1933a	—	Medit.
gummifer		18	Lindenbein 1932	—	Eur., N. Afr
maximus		18	„ „	—	Med., S.W Asia
		22	Wanscher 1932		
platycarpus		18	Tamamschjan 1933	—	Eur., T. As
carota	Carrot	18	„ „		
		18	Maude 1940	VVit	S.W. Asia, *cult*
		22	Melderis 1930		
grandiflorus		20	Wanscher 1933a	—	Algeria
pulcherrimus		20	„ „	—	Cauc., Pers
PIMPINELLA $x=9, 10$					
magna		18	Schulz-Gaebel, *l.c.*	—	Eur., Cauc.
peregrina		18	„ „	—	S. Eur., A. Minor
saxifraga	Burnet Saxifrage	18, 36	Wanscher 1932	M	Eur., N. Asi
anisum	Anise	18	Schulz-Gaebel, *l.c.*	MSp	Greece, Egy
		20	Tamamschjan 1933		
aromatica		20	„ „	—	Caucasus
AETHUSA $x=10$					
cynapium	Fool's Parsley	20	Wanscher 1931		Eur., S.W Asia
SIUM $x=10$					
latifolium	Water Parsnip	20	Wulff 1938	(V)	Eur., N. Am
sisarum	Skirret	20	Schulz-Gaebel, *l.c.*	R	W. Asia
decumbens	Japanese J.	—		V	Japan
helanianum	Jellico	—		V	St. Helena
CARUM $x=10, 11$					
carvi	Caraway	20	Wanscher 1931	Sp	Eur., N. S.W. Asia
		22	Schulz-Gaebel, *l.c.*		
bulbocastanum		22	„ „	—	Eur., N. A
rigidulum		22	„ „		Italy

ANETHUM (PEUCEDANUM) $x=11$					
graveolens	Dill	22	Tamamschjan 1933	Sp	Med., S.W. Asia
ANGELICA $x=11$					
pubescens		22	Ogawa 1929	—	Japan
sylvestris		22	„ „	—	Eur., N. & S.W. Asia
sp.		66	„ „	—	—
ARCHANGELICA $x=11$					
officianalis	Angelica	22	Schulz-Gaebel, T. 1931	M	Eur., Sib., Him.
APIUM (HELOSCIADIUM) $x=11$					
graveolens	Celery	22	Wanscher 1931	VSp	Eur.—N. India
inundatum		22	Scheerer 1939	—	Europe
nodiflorum		22	Wulff 1939	—	„
prostratum	Australian C.	22	Whitaker 1941	V	Australia
prostratum × *graveolens*		33	„ „	V	*expt.*
BIFORA $x=11$					
radians		22	Wanscher 1933a	—	S.Eur., A.M.
CHAEROPHYLLUM $x=11$					
aromaticum		22	Wanscher 1932	—	Europe
aureum		22	Schulz-Gaebel, *l.c.*	—	Eur., A.Min.
bulbosum	Chervil	22	Wanscher 1931	R	„
CORIANDRUM $x=11$					
sativum	Coriander	22	Wanscher 1932	Sp	S. Eur., S.W. Asia
CRITHMUM $x=11$					
maritimum	Samphire	22	Wanscher 1932	Sp	Europe
FERULA					
schtschurowskiana		22	Tamamschjan 1933	M?	Turkestan
alliacea		—		M	Persia
asafoetida	Asafoetida	—		MSp	Pers., Afgh.
galbaniflua	Galbanum	—		M	Persia
narthex		—		M	S.W. Asia
tingitana		—		H	S. Europe
persica		—		M	Cauc., Pers.
sumbul	Sumbul	—		M	Turkestan
FOENICULUM $x=11$					
vulgare	Fennel	22	Ogawa 1929	MSp	Europe
LEVISTICUM $x=11$					
officinale	Lovage	22	Melderis 1930	H	S. Europe
LIGUSTICUM $x=11$					
scoticum	Scotch Lovage	22	Wanscher 1932	M	N. Temp.
japonicum		22	M. & S. 1935	H	Japan

MYRRHIS $x=11$					
odorata	Myrrh, Sweet Cicely	22	Wanscher 1931	Sp	S. Eur., Cauc.
OENANTHE $x=11$					
aquatica	Water Dropwort	22	Wulff 1937a	M	Eur., N. As
lachenalii		22	,, ,,	M	Eur., Casp.
PASTINACA $x=11$					
sativa	Parsnip	22	Ogawa 1929	R	Eur., N. Am
PETROSELINUM $x=11$					
crispum	Parsley	22 22	Ogawa 1929, Rutland 1941	Sp	Eur., W.Asi
as *sativum*		23	Tamamschjan 1933		
PEUCEDANUM $x=11$					
decursivum		22	Ogawa 1929	M	Japan
japonicum		22	,, ,,		,,
palustre	Hog's Fennel	22	Schulz-Gaebel, T. 1931	M	Europe
graveolens	Dill	22	,, ,,	MSp	Medit.
sativum	Hog's Fennel	22	,, ,,	M	Eur., N. Am
SMYRNIUM $x=11$					
perfoliatum		22	Wanscher 1932	M	S. Eur., Cauc.
olusatrum	Alexanders	22	Rutland 1941	V	Eur., Med.
TRACHYMENE (DIDISCUS) $x=11$					
coerulea	Blue Lace Fl.	22	Wanscher 1933a	H	Australia
pilosus		44	,, ,,	—	,,
AEGOPODIUM $x=11$					
podagraria	Gout Weed	44	Melderis 1930	M	Eur., N. As
CNIDIUM $x=12$					
ajanense		24	M. & S. 1935	—	N. Asia
AZORELLA					
glebaria	Balsam Bog P.	—		M	Falklands
CUMINUM					
cyminum	Cummin	—		MSp	Medit.
DOREMA					
ammoniacum	Ammoniacum	—		M	Afgh., Pers
OPOPANAX					
chironium	Opopanax	—		P	Medit.

214. CLETHRACEAE

CLETHRA $x=8$					
arborea		16	Hagerup 1928	—	Madeira
alnifolia	Sweet Pepper-bush	32	,, ,,	H	S. U.S.A.

215. ERICACEAE

CALLUNA *x*=8					
vulgaris	Heather, Ling	16	Hagerup 1928	FoBDH	Eur., N. Am.
BRUCKENTHALIA *x*=9?					
spiculifolia	Spike Heath	36	Callan 1941	H	E.Eur., A.M.
PERNETTYA *x*=11					
tasmanica		22	Callan 1941	H	Tasmania
buxifolia		44	” ”	H	Mexico
ciliata (ciliaris)		44	” ”	H	Peru
pentlandii		44	” ”	H	Andes
prostrata		44	” ”	H	Magellan
furens		66	” ”	H	Chile
mucronata		66	” ”	H	Magellan
GAULTHETTYA *x*=11					
wisleyensis (*G. shallon* × *P. mucronata*)		77	Callan 1941	H	*cult*
GAULTHERIA *x*=11, 12, 13					
antipoda		22	Callan 1941	H	Tasm., N.Z.
cuneata		22	” ”	H	W. China
glomerata		22	” ”	H	S. America
hispida		22	” ”	H	Aust., N.Z.
cumingiana		44	” ”	H	Philip. Is.
griffithiana		44	” ”	H	Himalaya
shallon	Salal	88	” ”	HF	W:N. Amer.
procumbens	Checkerberry	24	Newcomer 1941	FH	N. America
itoana		26	Callan 1941	H	Japan
MONESES (PYROLA) *x*=11					
uniflora	Shinleaf	22	Wulff 1939b	H	North Reg.
KALMIA *x*=11, 12					
latifolia	Calico Bush	24	Hagerup 1928	H	E: N. Amer.
glauca		48	” ”	H	W: N. Amer.
polifolia	Bog K.	44	Callan 1941	H	”
LEIOPHYLLUM *x*=12					
buxifolium	Sand Myrtle	24	Hagerup 1928	H	S.E: U.S.A.
LOISELEURIA *x*=12					
procumbens	Alpine Azalea	24	Hagerup 1928	H	North Reg.
PHYLLODOCE *x*=12					
coerulea		24	Wanscher 1933b	H	North Reg.
DABOECIA *x*=12					
cantabrica	Irish Heath	24	Maude 1940	H	W. Europe
PIERIS *x*=12					
japonica etc.		24	Callan 1941	H	Japan
ANDROMEDA *x*=12					
polifolia	Bog Rosemary	48	Callan 1941	H	North Reg.
ENKIANTHUS *x*=12					
campanulatus		60	Hagerup 1941a	H	Japan

CASSIOPE $x=13$					
hypnoides		*c.* 48	Hagerup 1928	H	North Reg.
LEUCOTHOË $x=12$					
populifolia (acuminata)		24	Callan 1941	H	S.E: U.S.A.
ERICA $x=12$					
arborea etc.	Tree Heath	24	Hagerup 1928	W	Med., Cauc.
curvirostris		24	Callan 1941	—	S. Africa
hiemalis		24	Hagerup 1928	—	*cult*
sessilifolia (spicata)		24	Callan 1941	—	S. Africa
tetralix		24	Hagerup 1928	H	N. & W. Eur.
wilmoreana		24	Callan 1941	H	*cult*
OXYDENDRON $x=12$					
arboreum	Sourwood	24	Baldwin 1942	W	E: U.S.A.
CHIMAPHILA $x=13$					
umbellata etc.		26	Hagerup 1941a	H	Eurasia
ARBUTUS $x=13$					
andrachne	Strawberry Tree	26	Hagerup 1928	FHW	E. Medit.
canariensis		26	„ „	FH	Canary Is.
andrachnoides		26	Callan 1941	H	*cult*
xalapensis		26	„ „	H	Mexico
unedo	Arbute	—		FH	Medit.
ARCTOSTAPHYLOS $x=13$					
bicolor		26	Callan 1941	H	California
pungens		26	„ „	H	Cal., Mex.
uva-ursi		—		M	N. Temp.
LEDUM $x=13$					
latifolium (groenlandicum)	Labrador Tea	26	Hagerup 1928	BHM	Arctic
columbianum		26	Callan 1941	H	N. America
palustre	Crystal Tea	52	Hagerup 1941a	H	N.Am., N.As.
RHODODENDRON (AZALEA) $x=13$					
arborescens		26	Sax 1930a	H	N. America
carolinianum		26	„ „	H	„
catawbiense		26	„ „	H	„
ciliatum		26	„ „	H	Himalayas
dahuricum		26	„ „	H	Sib.—Japan
mucronulatum		26	„ „	H	N.E. As., Japan
eriocarpum (indicum)		26	M. Nakamura 1931	H	China
ferrugineum		26	Sax 1930a	H	S. Eur., Alps
hortense		26	M. Nakamura 1931	H	Japan
kaempferi		26	„ „	H	„
keiskei		26	„ „	H	„
lateritium		26	„ „	H	*cult*
ledifolium (mucronatum)		26	„ „	H	China
linearifolium		26	„ „	H	Japan
luteum		26	Sax 1930a	H	Asia Minor
macranthum		26	„ „	H	China
maximum		26	„ „	H	N. America

RHODODENDRON (*cont.*)					
metternichii (*japonicum*)		26	M. Nakamura 1931	H	Japan
molle		26	„ „	H	China
mortieri		26	Sax 1930a	H	*cult*
obtusum		26	„ „	H	Japan
occidentale		26	„ „	H	W: N. Amer.
ponticum		26	„ „	HW	A. Min., Syr.
praecox		26	„ „	H	*cult*
purpureum		26	„ „	H	Ind. Cey.
reticulatum		26	„ „	H	Japan
roseum		26	„ „	H	N. America
schlippenbachii		26	„ „	H	Korea, Jap.
smirnowii		26	„ „	H	*cult*
veseyi		26	„ „	H	N. America
viscosum		26	„ „	H	„
viscosepalum		26	„ „	H	*cult*
yedoense		26	„ „	H	Korea
calendulaceum		52	„ „	H	N. America
canadense		52	„ „	H	„
RAMISCHIA (PYROLA) $x=19$					
secunda		38	Hagerup 1941a	—	N. Europe
PYROLA (PIROLA) $x_2=23$ $(11+12)$					
grandiflora etc.		46	Hagerup 1928	—	N. Temp.
chlorantha		46	„ 1941a	—	„
media		92	„ „	—	„
EPIGAEA					
repens	Trailing Arbutus	—		HM	N. America
asiatica		—		H	Japan

216. VACCINIACEAE

GAYLUSSACIA $x=12$					
baccata	Huckleberry	24	Newcomer 1941	F	N. America
resinosa	Black H.	—		F	„
ursina	Buckberry	—		F	„
POLYCODIUM $x=12$					
stamineum	Deerberry	24	Longley 1927b	F	N: U.S.A.
PENTAPTERYGIUM $x=12$					
serpens		24	Callan 1941	H	Himalayas
OXYCOCCUS (VACCINIUM) $x=12$					
palustris	Cranberry			F	North Reg.
as *microcarpus*		24	Hagerup 1940		
as *quadripetalus*		48	„ „		
gigas		72	„ „	—	North Reg.
VACCINIUM $x=12$					
canadense	Velvet-leaf Blueberry	24	Longley 1927b	F	N: N. Am., Arct.
myrtillus	Whortleberry	24	Rutland 1941	F	N. Temp.
stamineum		24	Newcomer 1941	F	N: U.S.A.
vacillans		24	„ „	F	N.E: U.S.A.

VACCINIUM (*cont.*)					
vitis-idaea	Cranberry	24	Newcomer 1941	F	Arct., Sub-arct.
atrococcum	Bigbush Bl.	24	Longley 1927	F	N. America
		48	Newcomer 1941	F	"
corymbosum	Swamp Bl.	24	Longley 1927b	F	"
		48	Newcomer 1941	F	"
uliginosum	Moorberry, Bog Bilberry	24, 48	Hagerup 1933	F	N. Temp.
angustifolium	Low-bush Bl.	48	Longley 1927b	F	N. America
hirsutum	Hairy Bl.	48	" "	F	"
myrsinites	Myrtle Bl.	48	" "	F	"
pennsylvanicum	Early Bl.	48	Newcomer 1941	F	N: U.S.A.
oxycoccus	Small Cranberry	72	" "	F	N. America
pallidium	Blue-ridge Bl.	72	Longley 1927b	F	"
virgatum	Rabbit-eye Bl.	72	" "	F	"
arctostaphylos	Broussa Tea	—		B	Armen., Caucasus
caespitosum	Dwarf Bilberry	—		F	N. America
leschenaulti	Nilgiri Bl.	—		F	S. India
leucanthium	Mexican Bilberry	—		F	Mexico
macrocarpum	Cranberry	—		F	N. America
maderense	Madeira Whortleberry	—		F	Madeira
mortinia	Mortinia	—		F	Equador, Col.
parvifolium	Red Huckleberry	—		F	N.E: N. Am.
praestans	Kam. Bilberry	—		F	Kamchatka

219. DIAPENSIACEAE

DIAPENSIA $x=6$					
lapponica		12	Hagerup 1928	H	N. Temp.
as *obovata*		12	Sugiura 1937b		
PYXIDANTHERA $x=6$					
barbulata		12	Baldwin 1939	H	N. America
SHORTIA $x=6$					
galacifolia		12	Baldwin 1939	H	N. America
SCHIZOCODON $x=6$					
soldanelloides		12	Baldwin 1939	H	Japan
GALAX $x=6$					
aphylla		12, 24	Baldwin 1941	H	N. America

221. EBENACEAE

DIOSPYROS $x=15$					
discolor	Velvet Apple	30	Namikawa & H. 1928	F	Philip. Is.
lotus	Date Plum, Lotus	30	" "	F	Temp. Asia

DIOSPYROS (*cont.*)					
texana	Black Pers.	30	Baldwin & C. 1941	—	Mexico
virginiana	Persimmon	60, 90	Baldwin & C. 1941	F	N. America
kaki	Japanese Pers.	90	Namikawa & H. 1928	F	Ind.—Japan
ebenum	Ebony	—		WF	India
embryopteris	Gaub	—		F	Ind., Mal.
mespiliformis	African E.			W	W. Africa

222. SAPOTACEAE

PALAQUIUM $x=12$					
gutta	Gutta-percha	24	E.K.J.	Ru	Ind., Mal.
obovatum		—		Ru	,,
ACHRAS $x=13$					
zapota	Sapodilla	26	E.K.J.	F	C. Am., W. Ind.
ARGANIA					
sideroxylon		—		OW	Morocco
BUTYROSPERMUM					
parkii	Shea Butter T.	—		O	Trop. Afr.
CALOCARPUM					
sapota	Mammee	—		F	C. America
CHRYSOPHYLLUM					
cainito	Star Apple	—		F	W. Ind., Trop. Am.
roxburghii	Pitakara	—		F	Ind., Ceylon
LUCUMA					
caimito	Mexican Sapodilla	—		F	Peru
MADHUCA (BASSIA)					
butyracea	Bassia	—		AOW	India
indica	Illipe	—		AOW	,,
longifolia	Mowra	—		AOW	,,
MANILKARA (MIMUSOPS)					
bidentata	Balata	—		RuW	W. Ind., Guiana
kauki		—		FsMW	E. Ind.

223. MYRSINACEAE

ARDISIA (ICACOREA) $x=12, 23$					
crispa (*crenata*)		24	La Cour unp.	H	China, Mal.
		46	Sugiura 1936b		
MYRSINE $x=?$					
africana		—		H	Africa
capitellata		—		F	Trop. Asia
semiserrata		—		F	Himalayas

LABISIA					
pothoina	Fatima's Grass	—		M	Malaya

224. STYRACACEAE

STYRAX $x=8$					
obassia	Fragrant Styrax	16	Manshard 1936	HM	Japan
japonicum		40	,, ,,	M	,,
benzoin	Benzoin	—		M	Malaya
officinale	Storax	—		HM	S. Eur., A. Min.
HALESIA $x=12$					
diptera		24	Simonet & M. 1932	—	N. America
carolina (*tetraptera*)	Wild Olive, Snowdrop T.	24	Manshard 1936	FH	,,
PTEROSTYRAX $x=12$					
corymbosus		24	Manshard 1936	HM	Japan

228. LOGANIACEAE

FAGRAEA $x=6$					
fragrans		12	Mohrbutter 1936	—	Burma, Mal
litoralis		12	,, ,,	—	Java
STRYCHNOS $x=12$					
laurina		24	Mohrbutter 1936	M	E. Ind., Mal
nux-vomica	Nux-vomica	24	E.K.J.	M	Ind., Burma
sansibariensis	Zanzibar Poison Nut	24	Mohrbutter 1936	M	Trop. Africa
ignatii	St. Ignatius Bean	—		M	Philippines
potatorum	Clearing Nut T.	—		M	Ind., Bur.
toxifera	Poison Bark	—		M	Guiana
spinosa	Natal Orange	—		F	Tr. & S. Afr
BUDDLEJA $x=15$					
asiatica		30	Sugiura 1936a	H	S.E. Asia
curviflora		30	,, ,,	H	China
japonica		30	,, ,,	H	Japan

229. OLEACEAE

JASMINUM $x=13$					
affine		26	Bowden 1940a	P	Malaya
floridum		26	,, ,,	—	China
fruticans		26	Sax & Abbe 1932	—	Med., S.W Asia
humile	Italian Jasmine	26	Bowden 1940a	P	Afgh., Him
officinale (*grandiflorum*)	White J.	26	,, ,,	HP	Pers.—Chi.
wallichianum		26	,, ,,	P	Nepal
nudiflorum	Winter J.	52	,, ,,	HP	China
sambae	Mohle	—		HP	Trop. Asi

FORSYTHIA $x=13, 14$					
suspensa		26	Sugiura 1936b	H	China
		28	Sax & A. 1932		
europaea		28	,, ,,	H	Albania
ovata		28	,, ,,	H	Korea
viridissima		28	,, ,,	H	China
OSMANTHUS $x=22$					
fortunei		44	Sugiura 1936b	H	*cult*
SYRINGA $x=22, 23, 24$					
persica	Persian Lilac	44	Sax & A. 1932	H	Cauc., Pers.
amurensis	Amur Lilac	46	,, ,,		Manchuria
japonica	Jap. Tree L.	46	,, ,,	H	Japan
velutina	Manchurian L.	46	,, ,,	H	Korea
villosa	Late Lilac	46-48	,, ,,	H	China
vulgaris	Common L.	46-48	,, ,,	HP	S.E. Europe
pinnatifolia	Pinnate L.	48	,, ,,	H	China
pubescens	Hairy L.	48	,, ,,	H	,,
7 other species		46, 48	,, ,,	—	—
yunnanensis		68	Sax 1930b	H	China
OLEA $x=23$					
europaea	Olive	46	Sax & A. 1932	FOW	Med., S.W. Asia
laurifolia	Black Ironwood	c. 48	Andersson 1931	W	S. Africa
cuspidata	Indian O.	—		OW	India
FRAXINUS $x=23$					
americana	White Ash	46	Sax & A. 1932	HW	E:N. Amer.
excelsior	European A.	46	,, ,,	VW	Eur., A.Min.
floribunda	Himalayan A.	46	Bowden 1940a	W	Himalayas
oregona	Oregon Ash	46	Sax & A. 1932	W	N.W: U.S.A.
pennsylvanica	Red Ash	46	,, ,,	W	E:N. Amer.
chinensis	Chinese Ash	138	,, ,,	Fo_1W	E. Asia
ornus	Manna A.	—		HM	Med., S.W. Asia
LIGUSTRUM $x=23$					
amurense		46	Sax & A. 1932	H	N. China
vulgare etc.	Privet	46	,, ,,	H	Eur., Med.
ibota		46	,, ,,	H	China, Japan
		44	Sugiura 1936b		
yezoense		46	M. & S. 1935	H	Japan
CHIONANTHUS $x=23$					
virginica	Fringe Tree	46	Sax & A. 1932	H	E: U.S.A.
FORESTIERA $x=23$					
acuminata		46	Sax & A. 1932	H	Texas
NYCTANTHES					
arbortristis	Coral Jasmine	—		DHM	India

230. APOCYNACEAE

LOCHNERA $x=8$					
rosea		16	Sugiura 1936b	M	Tropics
ALLAMANDA $x=9$					
williamsii		18	Sugiura 1936a	H	*cult*
TRACHELOSPERMUM $x=10$					
jasminoides	Star Jasmine	20	Sugiura 1936a	H	Japan
APOCYNUM $x=11$					
androsaemifolium	Dogbane	16?	Schürhoff *et al.* 1937	—	N. America
cannabinum	Indian Hemp	16? 22	,, ,, Breslawetz *et al.* 1934	MT	,,
venetum		16? 22	Schürhoff *et al.* 1937 Medvedeva 1937	T	Med., Asia
MASCARENHASIA $x=11$					
elastica	Madagascar R.	22	E.K.J.	Ru	Trop. Afr.
NERIUM $x=11$					
oleander	Oleander	16?	Schürhoff *et al.* 1937	H	Medit.
odorum (*indicum*)	Scented O.	22	Sugiura 1936b	HM	Pers., Ind., Japan
CERBERA $x=11$					
tanghin	Tanghin poison T.	44	E.K.J.	M	Madagascar
odallum		—		M	India
ODONTADENA $x=12$					
speciosa		24	Andersson 1931	H	Brazil, Guiana
VINCA (CATHARANTHUS) $x=8, 23$					
rosea		16 (32)	Furusato 1940	H	Tropics
herbacea		46	Finn 1928	H	E. Eur., A. Minor
minor	Periwinkle	46	Bowden 1940, Rutland 1941	HM	Europe
major		92	Pannocchia-Laj 1938, Rutland 1941	HM	Medit.
ALSTONIA					
scholaris	Dita Bark T.	—		MReW	Tropics
ASPIDOSPERMA					
excelsum	Paddle Wood T.	—		W	Guiana
CARPODINUS					
lanceolata	Root Rubber	—		Ru	C. Africa
hirsuta				Ru	W. Africa

CARISSA					
carandas	Karaunda	—		DFW	India
CLITANDRA					
henriquesiana		—		Ru	W. Africa
CONOPHARYNGIA					
pachysiphon	Kpokpoka T.	—		T	W. Africa
DYERA					
costulata	Pontianac T.	—		Ru	Malaya
FUNTUMIA					
elastica	Lagos Rubber	—		Ru	Trop. Afr.
HOLARRHENA					
antidysenterica		—		MW	India
LANDOLPHIA					
heudelotii	Guinea L.	—		Ru	Trop. Afr.
kirki	E. African R.	—		Ru	„
owariensis	White Rubber	—		Ru	„
PLUMERIA					
acutifolia	Pagoda T.	—		HM	Mexico
alba	White Fr.	—		H	W. Indies
rubra	Frangipani	—		H	Mex.—Equador
THEVETIA					
nereifolia	Yellow Oleander	—		HM	Trop. Amer.

231. ASCLEPIADACEAE

ASCLEPIAS $x=11$					
curassavica	Bastard Ipecacuana	22	Moyer 1936	HTM	S. Austr.
incarnata	Milkweed	22	„ „	HTRu	N. America
latifolia	Broad leaf M.	22	„ „	—	„
salicifolia		22	„ „	—	Mexico
tuberosa	Butterfly M.	22	„ „	H	N. America
semilunata		—		T	Trop. Afr.
subulata	Desert M.	—		—	California
syriaca		—		Ru	N. America
GOMPHOCARPUS $x=11$					
fruticosus		22	Pardi 1934	—	Medit.
physocarpus		22	„ „	—	S. Austr.
tomentosum				Ru	Australia
HOYA $x=11$					
carnosa	Wax Plant	22	Pardi 1934	HM	Tr. Austr. & Asia
STAPELIA $x=11$					
gigantea	Carrion Fl.	22	Pardi 1934	—	S. Africa
variegata etc.		44	„ „	H	„

STEPHANOTIS $x=11$					
floribunda		22	Pardi 1934	H	Madagascar
VINCETOXICUM (CYNANCHUM) $x=11$					
officinale	Tame Poison	22	Pardi 1934	HM	Eur., Cauc.
nigrum		44	„ „	H	S. Eur., A. Minor
CEROPEGIA $x=11$					
debilis		44	Pardi 1934	H	Tr. Afr.
woodii		44	„ „	H	S. Africa
PERIPLOCA $x=11, 12$					
sepium		22	Sax & H. 1936	—	China
graeca		24	Pardi 1934	H	S. Eur., S.W. Asia
		22	Bowden 1940a		
nigrescens		—		(Ru)	Trop. Afr.
CRYPTOSTEGIA $x=12$					
grandiflora		24	Pardi 1934	H(Ru)	Madag., Ind.
CALOTROPIS					
gigantea	Madar	—		MT	Tr. Afr., As.
procera	Akund	—		MT	Tr. As., Afr.
HEMIDESMUS					
indicus	Indian Sarsaparilla	—		M	Ind., Ceylon
MARSDENIA					
tenacissima	Rajmahal Hemp	—		T	India
tinctoria	Java Indigo	—		D	Ind., Mal., China
TYLOPHORA					
asthmatica	Antamul	—		M	Ind., Mal.

232. RUBIACEAE

OLDENLANDIA $x=9$					
senegalensis		18	Hagerup 1932	—	Trop. Afr.
capensis		36	„ „	—	Tr. & S. Af.
umbellata	Chay	—		D	Abyss., E. Ind.
corymbosa	Parpata	—		M	India
VAILLANTIA $x=9$					
hispida		18	Fagerlind 1937	—	Medit.
muralis		18	„ „	—	S. Europe
HOUSTONIA $x=9$					
caerulea		36	Fagerlind 1937	—	N. America
BOUVARDIA $x=9$					
corymbosa (humboldti)		36	Fagerlind 1937	H	*cult*
hybrida		36	„ „	H	„
coccinea		c. 72	„ „	H	Guiana
leiantha		c. 72	„ „	H	Mexico

MANETTIA (LYGISTUM) $x=9$?					
coccinea		*c.* 36	Fagerlind 1937	H	Trop. Amer.
inflata		*c.* 36	„ „	H	S. America
CRUCIANELLA $x=9, 11$					
stylosa	Crosswort	18	Sugiura 1937b	H	Persia
10 other species		22	Fagerlind 1937	—	—
PENTAS $x=10$					
carnea (lanceolata)		20	Fagerlind 1937	H	Trop. Afr., Arab.
coccinea		20	„ „	—	Trop. Africa
oncostipula		20	„ „	—	„
PHUOPSIS $x=10, 11$					
stylosa		20	Fagerlind 1937	—	Caucasus
		22	Homeyer 1934		
RONDELETIA $x=10, 11$					
amoena		*c.* 40	Fagerlind 1937	—	Mexico
cordata (thysiflora)		40	„ „	H	Guatemala
erythroneura		40	„ „	—	Trop. Amer.
latifolia		44	„ „	—	Guatemala
odorata (speciosa)		44	„ „	H	Cuba, Pan.
ASPERULA (GALIUM) $x=10, 11$					
mollugiroides		20	Fagerlind 1937	—	Caucasus
arcadiensis		22	„ „	—	Greece
glauca		22, 44	„ „	—	Eur., Cauc.
cynanchica	Squinancywort	44	„ „	—	Eur., A.Min.
hexaphylla		44	„ „	H	S. Europe
odorata	Sweet Woodruff	44	„ „	HMSp	Eur., S.W. Asia
tinctoria	Dyer's W.	44	„ „	D	Europe
15 other species		—	„ „		—
GALIUM $x=10, 11, 12$					
spurium		20	Fagerlind 1937	—	Eur., S.W. Asia
vaillantii		20	„ „	N	N. Temp.
chonoënse as *Rubia chilensis*		22	Homeyer 1932	D	Chile
cruciata	Crosswort	22	Fagerlind 1934	M	Eur., N. Afr.
verum	Lady's Bedstraw	22, 44	„ 1937	BM	Eur., T. As.
aparine	Cleavers	*c.* 66, *c.* 88	„ 1934	M	N. Temp.
palustre		24, 48, 96	Hancock 1942	—	Eur., N. As.
SHERARDIA $x=11$					
arvensis	Field Madder	22	Fagerlind 1937	—	Eur., T. As.
RUBIA $x=11$					
cordifolia	Indian M.	22	Homeyer 1934	D	Trop. Asia & Africa

RUBIA (*cont.*)					
oliverii		44	Fagerlind 1934	—	E. Europe
cordata		44	„ 1937	D	Trop. Asia & Amer.
tinctorum	Madder	44	„ „	D	S.E. Eur., S.W. Asia
peregrina	Levant M.	*c.* 132	„ „	D	Eur., Med.
BURCHELLIA $x=11$?					
capensis		*c.* 22	Fagerlind, T. 1938	—	S. Africa
EXOSTEMMA $x=11$					
subcordata		22	Fagerlind 1937	—	W. Indies
PSYCHOTRIA $x=11$					
bacteriophila	C. Is. Wild Coffee	22	Fagerlind 1937	Ma	Comoro Is.
brasiliensis		22	„ „		Brazil
emetica		22	„ „	M	Peru
hirtella		22	„ „		Tr. E. Africa
undulata	Seminole Wild C.	22	„ „	Ma	W. Indies
africana		44	„ „		Africa
CINCHONA $x=10, 11$					
calisaya	Yellow C.	34?	Mendes 1939	M	Bolivia
		40	Fagerlind 1937		
ledgeriana		34?	Mendes 1939	M	Bolivia
		40	Fagerlind 1937		
succirubra	Red C.	*c.* 44	Homeyer 1934	M	Ecuador
officinalis	Crown Bark C.	—		M	Peru
micrantha		—		(M)	„
nitida		—		(M)	„
peruviana	Grey Bark C.	—		(M)	„
pahudiana		—		(M)	S. America
pubescens		—		(M)	„
CEPHAELIS (URAGOGA) $x=11$					
ipecacuanha	Ipecacuanha	44	E.K.J.	M	Brazil
granatensis	Cartagena I.	—		(M)	S. America
SARCOCEPHALUS $x=11$					
diderrichii		44	Fagerlind 1937	—	Trop. Africa
esculentus	Negro Peach	44	„ „	DFM	„
VANGUERIA $x=11$					
edulis	Voa Vanga	44	Fagerlind 1937	F	Trop. Africa
acutiloba		44	„ „	F	E. Africa
COFFEA $x=11$					
bengalensis		22	Fagerlind 1937	—	Ind., Malaya
canephora	Quillow Coffee	22	Doughty 1937	B	Trop. Africa
dewevrei		22	Krug 1937	—	„
dybowskii		22	„ „	—	„
eugenoides	E. African C.	22	Doughty 1939	B	E. Africa

ACC No. 745

COFFEA (*cont.*)					
excelsa	Senoussi C.	22	Heyn 1936	B	W. Africa
robusta	Congo C.	22	" "	B	Trop. Africa
semiexserta		22	Homeyer 1932	—	E. Indies
stenophylla	Sierra Leone C.	22	Fagerlind 1937	B	Abyssinia
ugandae		22	Krug 1936	—	Trop. Africa
abeokutae		22	Heyn 1936	B	"
		44	Fagerlind 1937		
congensis		22	Krug 1934	B	Congo
		44	Fagerlind 1937		
liberica	Liberian C.	22	" "	B	Trop. Africa
		44	Heyn 1936		
arabica	Mocha C.	22	Homeyer 1932	B	Trop. Africa
v. *nacional* etc.		44	Krug 1936		
v. *bullata*		44, 66, 88	" 1936, 1937		
GARDENIA *x*=11					
florida (*jasminoides*)	Cape Jasmine	22	Fagerlind 1937	HP	China
intermedia		22	" "	H	*cult*
spatulifolia		22	" "	—	Trop. Africa
thunbergia		22	" "	H	S. Africa
gummifera		—		M	India
PAVETTA *x*=11					
abyssinica		22	Fagerlind 1937	—	Abyssinia
caffra		22	" "	—	S. Africa
indica		22	" "	MMa	Trop. Asia & Aust.
gardeniifolia		44	" "	—	Abyssinia
IXORA *x*=11					
chinensis		22	Fagerlind 1937	H	S.E. Asia
coccinea		22	" "	HM	E. Indies
congesta		22	" "	H	India
12 other species		22	" "	—	—
HYMENODICTYON *x*=11					
excelsum		22	Fagerlind 1937	—	Ind., Malaya
MUSSAENDA *x*=11					
erythrophylla		22	Fagerlind 1937	H	Trop. Africa
frondosa		22	" "	H	Ind., Malaya
luteola		22	" "	H	Arabia
pentasemia		22	" "	—	India
stenocarpa		*c.* 70	" "	—	Trop. Africa
PORTLANDIA *x*=11					
grandiflora		*c.* 22	Fagerlind 1937	H	W. Indies
RANDIA *x*=11					
dumetorum		22	Fagerlind 1937	D	Trop. Asia
longiflora		22	" "	—	Ind., Malaya
maculata		22	" "	—	Trop. Africa
malleifera		—		D	"

SERISSA $x=11$					
foetida (japonica)		22	Fagerlind 1937	—	China, Jap.
CEPHALANTHUS $x=11$					
occidentalis	Button Bush	44	Fagerlind 1937	H	N. America
COPROSMA $x=11$					
acerosa		44	Fagerlind 1937	H	New Zeal.
baueri		44	„ „	H	„
cunninghamii		44	„ „	H	„
lucida		44	„ „	H	„
robusta		44	„ „	H	„
LEPTODERMIS $x=11$					
pilosa		44	Fagerlind 1937	—	China
lanceolata		*c.* 66	„ „	—	Himalayas
LUCULIA $x=11$					
pinceana		44	Fagerlind 1937	—	Himalayas
speciosa		—		H	*cult*
NERTERA $x=11$					
depressa	Bead Plant	44	Fagerlind 1937	H	S. Am., N.Z. Tas.
CATESBAEA $x=12$					
latifolia		24	Fagerlind 1937	—	W. Indies
HAMELIA $x=12$					
patens (erecta)		24	Fagerlind 1937	H	Trop. Amer.
HOFFMANNIA $x=12$					
discolor		48	Fagerlind 1937	H	Mexico
ghiesbreghtii		48	„ „	H	„
refulgens		48	„ „	—	„
roezlii		48	„ „	—	*cult*
regalis		48	Homeyer 1934	H	Mexico
RICHARDIA (RICHARDSONIA) $x=14$					
pilosa		28	Fagerlind 1937	—	Trop. Amer.
scabra	Mex. Clover	28	„ „	H	„
SPERMACOCE $x=14$					
tenuior		28	Fagerlind 1937	—	Trop. Amer.
POSOQUERIA $x=17$					
cookii		34	Fagerlind 1937	H	*cult*
longiflora		34	„ „	H	Guiana
ADINA					
cordifolia	Haldu	—		W	India
ANTHOCEPHALUS					
cadamba	Kadam	—		FFoMW	India
UNCARIA					
gambir	Gambier	—		DM	Malaya

233. CAPRIFOLIACEAE

ABELIA $x=8$					
engleriana		32	Sax & K. 1930	H	China
KOLKWITZIA $x=8$					
amabilis		32	Sax & K. 1930	H	China
VIBURNUM $x=8, 9, 10$					
fragrans		16	Simonet & M. 1932	H	China
acerifolium	Dockmackie	18	Sax & Kribs 1930	H	N. America
alnifolium	Hobble Bush	18	„ „ „	H	„
lantana	Wayfaring Tree	18	„ „ „	H	Eur., W. As.
lentago	Nannyberry	18	„ „ „	FH	W. N. Amer.
opulus	Guelder Rose	18	„ „ „	M	Eur., N. As. N. Amer.
prunifolium	Black Haw	18	„ „ „	FHM	N. America
trilobum	Amer. Cranberry Bush	18	„ „ „	F	N. N. Amer.
tinus	Laurustinus	36	Simonet & M. 1932	H	Medit.
odoratissimum (*awabucki*)	Sweet V.	40	Sugiura 1936b	H	Him., China
LONICERA $x=9$					
morrowi		18	Sugiura 1936a	H	Siberia
orientalis	Buckthorn H.	18	Sax & K. 1930	—	Him., S.W. Asia
periclymenum	Woodbine	18	Hagerup 1941	H	Eur., Med.
stabiana		18	Vilmorin & S., 1927b	—	Italy
coerulea		18, 36	Sax & K. 1930	H	Eur., Asia
thibetica		18, 36	„ „	H	China
tenuipes		36	M. & S. 1935	H	Japan
alseuosmoides		36	Sax & K. 1930		China
sempervirens	Trumpet H.	36	M. & S. 1935	H	N. America
henryi		54	Sax & K. 1930	H	China
angustifolia	Narrow Leafed H.	—		F	Himalayas
ciliata (*canadensis*)	Fly H.	—		(F)H	W.N. Amer.
involucrata		—		(F)H	N. America
other species	Honeysuckles	18, 36	Sax & K. 1930	—	—
SYMPHORICARPUS $x=9$					
orbiculatus	Indian Currant	18	Sax & K. 1930	(F)H	N. America
albus	Snowberry	*c.* 54	„ „	(F)H	„
DIERVILLA (WEIGELIA) $x=9$					
florida		36	Sax & K. 1930	H	N. China
hortensis		36	„ „	H	*cult*
praecox		36	„ „	H	Japan
rivularis		36	„ „	H	S.E. U.S.A.
sessilifolia	Bush Honeysuckle	36	„ „	H	„

SAMBUCUS $x=9, 19$					
canadensis	Sweet Elder	36	Sax & K. 1930	A(F)M	N. America
javanica		36	Bowden 1940a	—	Trop. Asia
racemosa	Redberried E.	36	Sax & K. 1930	A(F)B	Eur., W. As.
nigra	European E.	36	Kleinmann 1923	A(F)B	Eur., N. As.
buergeriana		38	M. & S. 1935	—	Japan
leiosperma	Am. Red. E.	—		—	W:N. Am.
pubens	,, ,,	36	Bowden 1940a	H	E:N. Amer.

234. ADOXACEAE

ADOXA $x=9$					
moschatellina	Moschatel	36	Geitler 1940	H	North Reg.
		36, 56? 72	M. & S. 1935		

235. VALERIANACEAE

VALERIANA $x=7, 8$					
baltica		14	Runquist 1937	—	Norway, Sw.
officinalis	Valerian, All-heal	14	,, ,,	HM	Eur., N. As.
		28	Meurman 1931		
		28, 56	Skalinska unp.		
capitata		56	S. & S. 1941	—	Arctic, Alp.
sambucifolia		56	Meurman 1931	—	Europe
as *excelsa*		14, 56	Runquist 1937		
salina		56	,, ,,	—	Scand.
dioica		16	Meurman 1925	—	Europe
flaccidissima		16	M. & S. 1935	—	Japan
wallichii		—		M	India
VALERIANELLA $x=7, 8, 9$					
eriocarpa	Ital. Corn Salad	14	Elvers 1932b	V	Eur., N. Afr.
olitoria	Lamb's Lettuce	14	,, ,,	V	Eur., S.W. Asia
echinata	Prickly C. S.	16	,, ,,	—	S. Eur., A. Minor
diodon		32	,, ,,	—	Asia Minor
stenaphoden		32	,, ,,	—	Algeria
szovitziana		c. 32	,, ,,	—	S.W. Asia
uncinata		16	,, ,,	—	Cauc., Pers.
carinata		18	,, ,,	—	Eur., S.W. Asia
turgida		18	,, ,,	—	Medit.
other species		14, 16	,, ,,		
FEDIA (MITROPHORA) $x=8$					
cornucopiae	African V.	32	Elvers 1932b	V	Medit.
PATRINIA					
scabiosaefolia		22	Sugiura 1936b	—	N. China
KENTRANTHUS					
ruber	Red Valerian	—		H	Eur., S.W. Asia

NARDOSTACHYS					
jatamansi	Spikenard	—		P	Himalayas
grandiflora		—		P	„

236. DIPSACACEAE

CEPHALARIA $x=5, 9$					
syriaca		10	Kachidze 1929	OH	Medit., S.W. Asia
ambrosioides		18	„ „	—	Greece
caucasica		18	„ „	—	Caucasus
graeca		18	„ „	—	Greece
leucantha		18	„ „	H	S.W. Europe
media		18	„ „		Transcauc.
rigida		18	„ „	H	S. Africa
transylvanica		18	„ „	H	S. Eur., S.W. Asia
uralensis (*corniculata*)		18	„ „	—	Banat
as *laevigata*		36			
alpina	Yellow C.	36	„ „	H	Europe
tartarica		36	„ „	H	N. & W. As., Russia
tchihatchewi		36	„ „	H	Armenia
CALLISTEMMA (*not* CALLISTEPHUS *q.v.*) $x=7$					
bracteatum		14	Kachidze 1929	H	E. Medit.
SCABIOSA $x=8, 9$					
$x=8$					
atropurpurea (*maritima*)	Sweet Scabious	16	Braun, T. 1936	H	Med., Canar.
caerulea		16	Risse 1928		E. Europe
columbaria	Small S.	16	Kachidze 1929	H	Old World
daucoides		16	Risse 1928	—	Algeria
fumarioides		16	Kachidze 1929	—	Banat
gramuntia		16	„ „	—	Medit.
holosericea		16	„ „	—	S. Europe
maritima		16	„ „	—	Medit.
ochroleuca	Cream S.	16	„ „	—	Eur., N. As.
purpurea		16	Poddubnaja 1933b	—	Caucasus
triniaefolia		16	Kachidze 1929	—	Balkans
vestina		16	„ „	—	Europe
$x=9$					
cretica		18	Kachidze 1929	—	Crete, Sicily
graminifolia		18	„ „	—	S. Europe
micrantha		18	„ „	—	Balk.—Cauc.
plumosa		18	„ „	—	Gr.—Pers.
prolifera	Carmel Daisy	18	„ „	—	Syr.—Cyp.
pterocephala		18	„ „	—	Greece
songarica		18	„ „	—	Siberia

SCABIOSA (*cont.*)					
ucrainica		18	Kachidze 1929	—	Ukraine
stellata		36	,, ,,	—	W. Medit.
caucasica		36, 54	,, ,,	H	Cauc., C. As.
KNAUTIA (SCABIOSA) $x=8, 10$					
$x=8$					
atrorubens		16	Risse 1928	—	—
magnifica		16	Chiarugi 1927b	—	Macedonia
orientalis		16	Kachidze 1929	—	S.W. Asia
sylvatica		16	Risse 1928	H	Caucasus
v. *dipsacifolia*		48	Chiarugi 1927c		
$x=10$					
hybrida (*integrifolia*)		20	Kachidze 1929	H	Gr., A. Min
purpurea		20	,, ,,	—	Caucasus
arvensis	Field S.	20	Wulff 1938	H	Eur., Cauc.
		40	Kachidze 1929		
DIPSACUS $x=9$					
azureus		18	Kachidze 1929	—	Siberia
ferox		18	,, ,,	—	Corsica
fullonum	Fuller's Teasel	18	,, ,,	HTo	Eur., Cauc.
as *sativus*		18	,, ,,		
inermis	Spineless T.	18	,, ,,	H	Himalaya
laciniatus	Cutleaf T.	18	,, ,,	H	Eur., S.W. Asia
pilosus	Hairy T.	18	,, ,,	H	Eur., Cauc.
sylvestris	Venuscup T.	18	,, ,,	H	Eur., S.W. Asia
torsus ?		18	,, ,,	—	—
chinensis	China T.	36	,, ,,	—	China
PTEROCEPHALUS (SCABIOSA) $x=9$					
plumosus		18	Kachidze 1929	—	Asia Minor
SUCCISA (SCABIOSA) $x=10$					
australis		20	Kachidze 1929	H	S. Europe
pratensis	Devil's Bit Sc.	20	,, ,,	H	Europe
MORINA $x=17$					
longifolia	Whorl Fl.	34	Kachidze 1929	H	Himalayas
persica		34	,, ,,	—	Him., S.W Asia

238. COMPOSITAE

Order of the Tribes with their Basic Numbers

I Cichorieae: 3-9
II Heliantheae: 4-19
III Astereae: 4, 5, 9 (4+5?)
IV Inuleae: 5, 7, 8, 9, 12, 13
V Cynareae: 6-17
VI Senecioneae: 5, 9, 12, 30
VII Helenieae: 9, 12
VIII Arctotideae: 5, 7, 8
IX Calenduleae: 7, 9, 10
X Anthemideae: (8), 9, 10
XI Eupatorieae: 9, 10, 17, 19
XII Mutisieae: 23, 25

TRIBE I : CICHORIEAE

(1) Crepidinae

CREPIS (108 species counted)

S. 1 : *EUCREPIS* $x=3, 4, 5, 6, 7, 8$. $x_2=11$ (4+7) etc. (High Polyploids Apomictic)

capillaris etc.	Hawk's beard	6	Babcock 1942	—	Europe
neglecta		6, 8	" "	—	Gr., S.W. Asia
pulchra etc.		8	" "	—	Europe
tingitana etc.		10	" "	—	Mor., Spain
mollis etc.		12	" "	—	E. Europe
nana etc		14	" "	—	Arctic
incana etc.		16	" "	—	Greece
tenuifolia		15, 20, 24	" "	—	Him., N. As.
biennis etc.		40	" "	—	Europe
occidentalis		22, 44	" "	—	W. N. Amer.
acuminata		33, 44, 55?	" "	—	"
barbigera		88	" "	—	N. America

. 2 : *BARKHAUSIA* $x=4, 5$

setosa etc.		8	Babcock 1942	—	Eur., A.Min.
vesicaria		8, 16	" "	—	Spain
foetida etc.		10	" "	—	Eur., N. As.
syriaca		10-18	" "	—	Syria

. 3 : *CATONIA* $x=4, 5, 6$

chrysantha etc.		8	Babcock 1942	—	Sib., Altai.
sibirica etc.		10		—	Eur.—Him.
paludosa		12	" "	—	Europe
polytricha		16	" "	—	Temp. Asia

ODIGIA $x=5$

commutata		10	Hollingshead & B. 1930	—	Greece

XERIS (LACTUCA, CREPIDIASTRUM) $x=5, 7, 8$. [Triploid Apomictic]

denticulata etc.		10	Babcock *et al.* 1937	—	Japan
alpicola		14	" "	—	"
dentata		21	" "	—	"
repens etc.		16	" "	—	"
chinensis		32	" "	—	"
aponica		48	" "	—	"

OUNGIA (LACTUCA, CREPIS) $x=5, 8$

enuifolia		15, 20	Babcock *et al.* 1937	—	Him., N. As.
aponica		16	" "	—	Japan
paleacea		32	" "	—	Yunnan

UBYAEA (LACTUCA) $x=8$

hispida		16	Babcock *et al.* 1937	—	A. Min., Syria

PRENANTHES (CREPIS) $x=8, 9$					
nana etc.		16	Babcock *et al.* 1937	—	N. Americ
alba		32	„ „	—	„
purpurea		18	„ „	—	Europe
CEPHALORRHYNCHUS (LACTUCA) $x=9$					
glandulosus		18	Babcock *et al.* 1937	—	Asia Mino
LACTUCA (MULGEDIUM) $x=8, 9.$ $x_2=17$					
$x=8$					
aurea		16	Babcock *et al.* 1937	—	Europe
bracteata		16	„ „	—	Himalayas
bourgaei	Bourget	16	Whitaker & J. 1939	—	A. Minor
cretica		16	„ „	—	„
tuberosa		16	Babcock *et al.* 1937	—	A. Minor, Persia
$x=9$					
altaica		18	Thompson *et al.* 1941	—	Altai
chondrillaeflora		18	Whitaker & J. 1939	—	S. Europe
indica		18	Thompson *et al.* 1941	—	E. Asia
laciniata		18	„ „	—	China, Ja
muralis	Wall L.	18	„ „	—	Europe
perennis	Perennial L.	18	„ „	—	„
raddiana		18	„ „	—	Japan
saligna		18	„ „	—	Europe
sativa	Lettuce	18 36 ± 1	„ „ Einset 1944	V	*cult*
scariola	Wild L.	18	Whitaker & J. 1939	—	Eur., S.W Asia
serriola	Prickly L.	18	Thompson *et al.* '41	V	Europe
tatarica		18	Whitaker & J. 1939	—	Ind., W.
viminea		18	Babcock *et al.* 1937	—	Turkey
virosa	Wild L.	18	Thompson *et al.* 1941	M	Europe
orientalis		36	Babcock *et al.* 1937	—	Himalaya
$x=17$					
campestris		34	Babcock *et al.* 1937	—	E:N. Am
canadensis		34	Whitaker & J. 1939	—	„
floridiana		34	Thompson *et al.* 1941	—	„
graminifolia		34	„ „	—	„
spicata	Blue L.	34	„ „	—	„
villosa		34	„ „	—	„
HIERACIUM $x=7, 9$ [Polyploids Apomictic]					
japonicum		14	M. & S. 1935	—	Japan
auricula etc.	Hawkweed	18	Gentscheff 1937a	—	Europe
sexual species		18	Gustafsson 1935b	—	—
apomicts		27, 36, 45	„ „	—	—

CHONDRILLA $x=5$ [Polyploids Apomictic]					
ambigua (*pauciflora*)		10	Poddubnaja 1933a	—	Russia, Sib.
juncea etc.		15	„ „	—	Eur., C. Asia
ornata etc.		20	„ „	—	Rus., C. Asia
LAUNAEA $x=8$					
integrifolia		16	Hagerup 1932	—	Sudan
REICHARDIA (PICRIDIUM) $x=8$					
tingitana		16	Telezinsky, T. 1931	D?	Med., S.W. Asia
TARAXACUM $x=8$ [Polyploids Apomictic]					
bessarabicum (*palustre*)		16	Poddubnaja & D. 1934	V	Eur., N. As.
minimum		16	„ „	V	Italy
multiscaposum		16	„ „	V	Altai
nutans		16	„ „	(Ru)	China
vernale		16	„ „	V	C. Asia
kok-saghyz	Kok-Saghyz	16 (32)	Navashin & G. 1941	Ru	Turkestan
laevigatum	Smooth D.	24	Poddubnaja & D. 1934	(V)M	N. & S. Temp.
microspermum		24	Poddubnaja & D. 1937		Altai
obliquum		24	Gustafsson 1932	M	N. & E. Eur.
parnassicum		24	Poddubnaja & D. 1937	Ru	Greece
retroflexum		24	„ „	Ru	—
robustum		24	„ „	Ru	Japan
vulgare	Dandelion	24	Poddubnaja & D. 1934	M(V)	N. & S. Temp.
balticum		32	Gustafsson 1935b	—	Scandinavia
fulvum		32	„ „	—	Scand., Fin.
hybernum (*gymnanthum*)		32	Poddubnaja & D. 1937	Ru	Medit.
lactucaceum		32	Gustafsson 1935a	—	Scandinavia
lanceolatum		32	„ „	—	„
megalorrhizon	Krim-saghyz	32	La Cour unp.	Ru	Crimea
montanum		40	Poddubnaja & D. 1937	—	A. Min., Persia
nordstedtii		48	Gustafsson 1935b	—	Sweden
30 other species		16, 24, 32, 48	„ „	—	—
SONCHUS $x=8, 9$					
oleraceus	Sow Thistle	16	Marchal 1920,	Fo(V)	Cosmop.
		16	Barber 1941b		
		32	Cooper & M. 1935		
arvensis		64	Wulff 1937b	—	Eur., N. As.
asper		18	„ „	—	Cosmop.
palustris		18	„ 1937b	—	Eur., A.Min.
oleraceus × *asper*		25	Barber 1941b	—	*nat. hybrid*

(2) Cichorinae					
ZACYNTHA $x=3$					
verrucosa		6	Navashin 1930	H	S. Eur., A. Minor
RHAGADIOLUS $x=5$					
edulis		10	Lewitzky, T. 1936	—	Medit., A. Minor
HEDYPNOIS (RHAGADIOLUS) $x=8, 9?$					
globulifera		16	Negodi 1936b	—	Medit.
tubaeformis		16	„ „	—	„
cretica		54	Kuhn, T. 1931	—	„
ARNOSERIS $x=9$					
maxima (*pusilla*)		18	Wulff 1939	—	Europe
minima	Lamb's Succory	18	Maude 1940	—	„
CICHORIUM $x=9$					
intybus	Chicory	*c.* 18	Makowetsky 1929	BV	Eur., S.W. Asia
endivia	Endive	36	Thomas unp.	V	„ „
(3) Leontodontinae					
HYPOCHAERIS (HYPOCHOERIS) $x=4, 5, 6$					
radicata	Cat's ear	8	Navashin, T. 1926	—	Eur., N. Afr.
glabra		10, 12	L. & L. 1942	—	Europe
LEONTODON $x=4, 6, 7$ [Apomictic]					
asper etc.		8	Bergman 1935c	—	S. Eur., S.W. Asia
autumnalis		12	„ „	—	Europe
crispus		14	„ „	—	S. Europe
hispidus	Hawkbit	14+f	„ „	—	N. Afr., S.W. Asia
PICRIS $x=5$ [Apomictic]					
hieracioides		10	Bergman 1932	—	Eur., T. As.
THRINCIA (LEONTODON) $x=5$					
hirta		10	Wulff 1937b	—	Europe
TRAGOPOGON $x=6$					
brevirostris		12	Poddubnaja *et al.* 1935	—	E. Eur., Turkes.
major (*dubius*)		12	„ „	R	Europe
porrifolius	Salsify	12	„ „	R	Medit.
pratensis	Goat's beard	12	Winge 1926	HR	Eur.—N.W. India
cupani		24	P. *et al.* 1935	R	Sicily
SCORZONERA $x=6, 7$					
hispanica	Black Salsify	14	P. *et al.* 1935	R	S. Europe
deliciosa	Sicilian Sc.	12	Telezynski, T. 1931	R	Sicily
ensifolia		12	Poddubnaja, T. 1936	—	E. Europe

SCORZONERA (*cont.*)					
latifolia		12	P. *et al.* 1935	—	C. Europe
tuberosa		12	„ „	R	Turkestan
nervosa		12, 13	Krajevoy 1934b	—	Arm., Pers.
acanthoclada		14	P. *et al.* 1935	—	Turkestan
humilis		14	Wulff 1938	—	Europe
inconspicua		14	P. *et al.* 1935	—	Turkestan
petrovii		14	„ „	—	N. Asia
stricta		14	„ „	—	Cauc., Sib.
tau-saghys	Tau Saghyz	14	Krajevoy 1934a	Ru	N. Asia
kirghisorum		—		(Ru)	Turkestan
(4) Scoliminae					
SCOLYMUS $x=?$					
hispanicus	Spanish Oyster Pl.	—		R	Medit.

TRIBE II: HELIANTHEAE

HOLOCARPHA $x=4$					
macradenia		8	J. Clausen *et al.* 1934	—	California
CALYCADENIA (HEMIZONIA) $x=4, 6, 7$					
spicata		8	J. Clausen *et al.* 1934	—	California
villosa		12, 14	„ „	—	„
HEMIZONIA $x=4$-14					
virgata		8	Johansen 1933b	—	California
pauciflora		10	„ „	—	„
bicolor		12	„ „	—	„
ciliosa		12	„ „	—	„
heermanni		12	„ „	—	„
mollis		14	„ „	—	„
truncata		14	„ „	—	„
villosa		14	„ „	—	„
wheeleri		16	„ „	—	„
kelloggi		18	„ „	—	„
pallida		18	„ „	—	U.S.A.
pungens		18-24	„ „	—	California
angustifolia		20	„ „	—	„
parryi		22, 24	J. Clausen *et al.* 1934	—	„
fasciculata		22, 24, 28	Johansen 1933b	H	„
clementina		24	„ „	H	N. America
congdoni		24	„ „	—	„
greeneana		24	„ „	—	S. Benito Is.
paniculata		24	„ „	—	California
floribunda		26	„ „	—	„
congesta		28	„ „	—	„
plumosa		28	„ „	—	„

MADIA *x*=6, 7, 8, 9					
bolanderi		12	J. Clausen *et al.* 1936	—	California
rammii (*yosemitana*)		12, 16	J. Clausen *et al.* 1937	—	„
madioides		14	Johansen 1933b	—	„
glomerata		28	J. Clausen *et al.* 1934	H	W:N. Amer.
citriodora		16	J. Clausen *et al.* 1937	—	California
elegans (*corymbosa*)		16	„ „	H	W:N. Amer.
radiata		16	„ „	—	California
yosemitana		16	Johansen 1933b	—	„
dissitiflora		32	„ „	H	N. America
exigua (*filipes*)		32	„ „	—	W:N. Amer.
sativa	Chilean Tarweed	32	„ „	HO	Chile
sp.		48	J. Clausen *et al.* 1937	—	—
nutans		18	„ „	—	California
pumila		18	Johansen 1933b		N. America
LAYIA *x*=7, 8					
calliglossa		14	J. Clausen *et al.* 1934	H	California
chrysanthemoides		14	„ „	H	„
elegans	Tidy Tips	14	„ „	H	„
platyglossa		14	„ „	H	„
glandulosa		16	„ „	H	W:N. Amer.
hieracioides		16	„ 1937	—	California
other species		14, 16	„ 1934		
HOLOZONIA (LAGOPHYLLA) *x*=7					
filipes		14	Johansen 1933b	—	California
LAGOPHYLLA *x*=7					
ramosissima etc.		14	Johansen 1933b	—	W:N. Amer.
DAHLIA *x*=8, 18					
coccinea	Fire D.	32	Lawrence 1931	—	Mexico
coronata		32	„ „	—	„
imperialis		32	„ „	—	„
maxonii		32	„ „	—	Mex., Guat.
variabilis	Garden D.	64	„ „	HRV	*cult*
merckii		36	„ „	—	Mexico
HELIOPSIS *x*=8					
helianthoides (*laevis*)		32	Cooper & M. 1935	H	E:N. Amer.
PARTHENIUM *x*=9					
incanum	Mariola	36	Botschanzewa 1936	—	W:N. Amer.
		54, 72, 90	Stebbins & K. 1944		
argentatum	Mexican Rubber, Guayule	36, 38, 54, 72, 108-111	„ „	Ru	Texas, Mex.
integrifolium		—		—	S.E: U.S.A.

XANTHIUM $x=9$					
italicum		36	Symons 1926	M	China, Japan
strumarium	Bur Weed	36	M. Ishikawa 1916	MO	Cosmop.
inflexum		36	Symons 1926	—	N. America
pennsylvanicum		36	,, ,,	M	N. America
GALINSOGA $x=9$					
parviflora		36	Navashin, T. 1926	—	S. America
HETEROSPERMUM $x=11$					
xantii		22	Gelin 1934	—	California
AMBROSIA $x=12, 17, 18$					
trifida	Ragweed	24	Cooper & M. 1935	—	N. America
bidentata		34	K. L. Jones 1943	—	,,
artemisifolia (elatior)		36	,, ,,	—	,,
trifida × *elatior*		30	,, ,,	—	—
BIDENS $x=12$					
cernua	Bur Marigold	24	Lewitzky, T. 1936	—	N. Temp.
ferulaefolia		24	Gelin 1934	—	Mexico
chinensis (pilosa)		48	,, ,,	H	S. America
heterophylla		48	,, ,,	—	W:N. Am., Mexico
tripartita		48	Lewitzky, T. 1936		Eur., Sib.
leucantha (pilosa)		72	Gelin 1934	H	S. America
COSMOS (BIDENS) $x=12$					
bipinnatus		24	Sugiura 1936b	H	Mexico
sulphureus		24	,, ,,	H	,,
diversifolius		—		H	,,
dahlioides		24	Gelin 1934	H	,,
as *atrosanguineus*		48	Lawrence 1929		
ZINNIA $x=12$					
elegans		24	Ishikawa 1916	H	Mexico
LEPTOSYNE (COREOPSIS) $x=12$					
bigelowii		24	Gelin 1934	H	California
maritima	Sea Dahlia	24	,, ,,	H	,,
COREOPSIS $x=12, 13$					
bicolor (tinctoria)		24	Gelin 1934	H	C: U.S.A.
cardaminifolia		26	,, ,,	—	S: U.S.A.
drummondii (picta)		26	,, ,,	H	Texas
grandiflora (floribunda)		26	,, ,,	H	S: U.S.A.
tripteris		26	,, ,,	—	U.S.A.
verticillata		*c.* 52	E.K.J.	H	C: U.S.A.
HIDALGOA $x=15$					
werklei	Climbing Dahlia	30	Lawrence 1931b	H	Costa Rica
GUIZOTIA $x=15$					
abyssinica	Nigerseed	30	Richharia & K. 1938	O	Trop. Afr.

HELIANTHUS $x=17$					
grosse-serratus	Sawtooth S.	32	Cooper & M. 1932	H	E: U.S.A.
annuus	Sunflower	34	Geisler 1931	HO	*cult* (N.Am.
		(68)	Rybin 1939		
giganteus	Giant S.	34	Geisler 1931	HO	E:N. Amer.
maximiliani		34	„ „	H	W:N. Amer
microcephalus		34	„ „	H	N. America
occidentalis		34	„ „		„
orygalis (salicifolius)		34	„ „	H	W: N. Amer
ruderalis	Wild S.	34	Klimochkina 1940		N. America
strumosus	Woodland S.	102	Wagner 1932	H	„
rigidus		102	„ „	H	W:N. Amer
tuberosus	Jerusalem Art.	102	„ „	R	E:N. Amer.
tub. × *annuus*		68	Shchibra 1936	—	*expt*
BALSAMORHIZA $x=19$					
hookeri	Balsam Root	38	W. A. Weber unp.	R	W:N. Amer
incana, serrata		38	„ „	R	„ „
sagittata	Oregon S.	38	„ „	GHR	„ „
WYETHIA $x=19$					
angustifolia		38	W. A. Weber unp.	H	W:N. Amer

TRIBE III: ASTEREAE

ASTRANTHIUM (BELLIS) $x=4$					
integrifolium		8	Baldwin 1941	H	N. America
		18?	Negodi 1935		
BELLIS $x=9$					
annua		18	Negodi 1935	—	N.W. Med.
perennis	Daisy	18	„ „	H	Europe
sylvestris		36, 54	„ T. 1936	—	Medit.
FELICIA $x=8$					
amelloides	Blue Daisy	16	Sugiura 1936b	H	S. Africa
BELLIUM $x=9$					
bellidioides		18	Negodi 1935	H	Medit.
ASTER $x=5, 9$					
multiflorus		10	Delisle 1937	H	N. America
novae-angliae		10	„ „	H	„
alpinus		18	Sakai 1935	H	North Reg.
fastigiatus		18	Tahara & S. 1926	—	Siberia
scabra (scaber)		18	„ „	—	Japan
tripolium	Sea Aster	18	„ „	—	Eur., N. Afr
viscidulus		18	„ „	—	W. Europe
trinervius		36	„ „	—	„
alpinus	Rock Aster	36	S. & S. 1938	H	Alps—Altai
flaccidus		54	„ „	—	Altai
tartaricus		54	Tahara & S. 1926	—	N. Asia
laevis	Michaelmas Daisy	54	Revell unp.	H	N.E: U.S.A
capensis		—		H	S. Africa

ASTEROMOEA (BOLTONIA) $x=9$					
indica		18	Tahara & S. 1926	H	Japan
savatieri		18	„ „	—	—
CALLISTEPHUS (*not* CALLISTEMMA) $x=9$					
sinensis	China Aster	18	Tahara & S. 1926	H	Sib., China
SOLIDAGO $x=9$					
virgaurea	Golden Rod	18	Scheerer, L. & L. 1942	H(Ru)	Europe
rugosa		18	Goodwin 1937	H	N. America
sempervirens		18, 36	„ „	H	„
ERIGERON $x=9$ [Triploids Apomictic]					
canadensis	Fleabane	18	Okabe 1934	H	Cosmop.
dubius		18	Holmgren 1919	—	Argentine
eriocephalus		18	„ „	—	N. Arctic
glabellus		18	„ „	H	N. America
glabratus		18	Sakai 1934	—	Switzerland
		36	M. & S. 1935		
annuus		27	Okabe 1934	—	N. America
linifolius		*c.* 54	Holmgren 1919	—	Temp.
bonariensis		54	„ „	—	S. America
aurantiacus	Orange Daisy	—		H	Turkestan
COMMIDENDRUM					
gummiferum		—		Re	St. Helena
OLEARIA					
argophylla		—		W	Aust.—Tas.
CHRYSOTHAMNUS					
nauseosus	Rabbit Brush	—		(Ru)	W:N. Amer.
HAPLOPAPPUS					
ericoides		—		(Ru)	W:N. Amer.
nanus		—		(Ru)	„

TRIBE IV: INULEAE

ODONTOSPERMUM (ASTERISCUS) $x=5$					
spinosum		10	Tongiorgi 1935	—	Medit.
sericeum		—		H	Canary Is.
BUPHTHALMUM (TELEKIA) $x=5$					
grandiflorum	Ox-eye	20	Sakai 1935a	H	S. Europe
salicifolium		20	Tongiorgi 1935	—	„
speciosum		20	„ „	—	S. Eur., W. Asia
PULICARIA (INULA) $x=5, 9$					
vulgaris		18	Wulff 1937b	—	Temp.
dysenterica		20	Rodolico 1935	—	Medit.
odorata		—		Sp	„

INULA $x=5, 8, 9$ [Triploid Apomictic]					
britannica		16, 24	Okabe 1937	—	Eur., Asia
cordata etc.		16	Tongiorgi 1935	—	Banat, A.M.
grandiflora, etc.		16	S. & S. 1940	—	Caucasus
conyza		32	„ „	—	Eur., W. As.
viscosa		18	Rodolico 1935	—	S. Europe
helenium	Elecampane	*c.* 20	Tongiorgi 1935	—	Eur., N. As.
racemosa		20	„ „	H	Him., W.Ch.
ensifolia (*bubonium*)		—		H	Eur., N. As.
GNAPHALIUM $x=7$					
luteo-album		14	Wulff, T. 1938	—	Cosmop.
uliginosum		14	„ „	—	N. Eur., As.
sylvaticum		*c.* 58	Sokolovskaja & S. 1938	—	„
FILAGO $x=7$					
arvensis	Cudweed	28	Wulff 1937b	—	Eur., N. As.
germanica		28	„ „	—	Eur., S.W. Asia
spathulata		28	Hagerup 1941	—	Eur., N. Af., S.W. Asia
ANTENNARIA $x=7$ [Polyploids Apomictic]					
dioica	Cat's Ear	28	Bergman 1935b	H	Eur., N. As.
neglecta etc.		28	Stebbins 1932	—	N. America
brainerdii		42	„ „	—	„
carpathica		40, 42	Bergman 1935b	—	N. Temp,
magellanica		56	„ 1937	—	Magellan
neodioica		*c*, 52	Stebbins 1932	—	N. America
alpina (*intermedia*)		84	Bergman 1935b	H	N. Temp.
canadensis etc.		*c.* 84	Stebbins 1932	—	N. America
HELICHRYSUM $x=7, 12$					
arenarium		14	Tongiorgi 1935	—	Eur., Cauc,
		28	Scheerer, L. & L. 1939		
thianschanicum		28	Tongiorgi 1935	H	W. China
bracteatum	Everlasting	24	„ „	H	Australia
serpyllifollium	Hottentot Tea	—		B	S. Africa
vestitum	Cape E.	—		H	„
AMMOBIUM $x=12$					
alatum	Everlasting	24	Sugiura 1936b	H	Australia
LEONTOPODIUM $x=7, 13$					
alpinum	Edelweiss	26	Sakai 1935	H	Europe
kurilense		26	„ 1934	H	Japan
campestre		49	S. & S. 1938	—	Siberia
RAOULIA					
eximia	Sheep Pl.	—		H	New Zeal.
mammillaria	Pin-Cushion Pl.	—		To	„

TRIBE V: CYNAREAE

XERANTHEMUM *x*=6, 10					
annuum		12	Poddubnaja 1931	H	Medit.
squarrosum		12	„ „	—	„
cylindraceum		20	„ „	—	„
CENTAUREA *x*=7, 8, 9, 10, 11					
scabiosa		14	Dark unp.	—	Europe
		20	Roy 1937		
		24	Fritsch 1935		
iberica		16	Poddubnaja 1931	—	Spain
macrocephala		18	„ „	H	Armenia
ossica		18	„ „	—	Caucasus
ovina		18	„ „	—	Sib., A. Min.
reflexa		20	„ „	—	Arm., Cauc.
salonitana		20	„ „	—	E. Europe
phrygia		22	„ „	—	Europe
cyanus	Cornflower	24	Fritsch 1935	H	Eur., Cauc.
dealbata		24	„ „	H	A. Min., Cauc., Pers.
hoffmanniana (*pulchra*)		24	„ „	—	India
montana		24	„ „	H	Europe
nigrescens		24	„ „	—	„
pulcherrima		24	„ „	—	Arm., Cauc.
rupestris		24	„ „	—	Europe
ruthenica		30	Poddubnaja 1931	H	Cauc., Sib.
fischeri		40	„ „	—	Eur., S.W. Asia
jacea		44	Roy 1937, Wulff 1937b	—	Europe
nemoralis		44	„ „	—	„
nigra	Knapweed	44	„ „	—	„
bella		24	Fritsch 1935	—	Caucasus
		c. 55	Poddubnaja 1931		
kooenigii		*c.* 55	„ „	—	„
simplicicaulis		*c.* 55	„ „	—	Armenia
collina		60	Roy 1937	—	Medit.
AMBERBOA *x*=8					
moschata		32	Poddubnaja 1931	—	S.W. Asia
ECHINOPS *x*=8					
sphaerocephalus	Globe Thistle	32	Poddubnaja 1927	H	Med.—N. Asia
PHAEOPAPPUS *x*=8					
steveni		16	Poddubnaja 1931	—	Caucasus
ARCTIUM *x*=8, 9					
minus	Burdock	32	Wulff 1937b	—	Europe
lappa (*edulis*)		32	Sugiura 1936	M	„
		36	Nakajima 1936	R	Japan
tomentosum		36	Poddubnaja 1931	—	Europe

CARDUUS $x=8, 11$					
crispus		16	Poddubnaja 1931	—	Europe
nutans	Musk Thistle	16	,, ,,	—	Eur., T. A
acanthoides		22	,, ,,	—	Eur., Cauc.
STEVIA $x=11$					
rabaudiana	Kaa He-e	22	E.K.J.	SuV	Paraguay
CARTHAMUS $x=8, 12$					
tinctorius	Safflower	24	Poddubnaja 1931	DO	O.W. Trop
lanatus		64	,, ,,	O	Eur.—Pers.
CARLINA $x=10$					
vulgaris	Carline Thistle	20	Lewitzky, T. 1936	—	Eur., N. A
COUSINIA $x=13$					
carduiformis		26	Poddubnaja 1931	—	Caucasus
SAUSSUREA $x=13$					
brachycephala		26	M. & S. 1935	—	Japan
sagitta		26	,, ,,	—	,,
riederi		39	,, ,,	—	Kamtchatk
alpina (*affinis*)		36?	Ishikawa 1916	—	N. Eurasia
CRUPINA $x=14, 15$					
crupinastrum		28	Poddubnaja 1931	—	Medit.
vulgaris		30	,, ,,	H	,,
JURINEA $x=15$					
cyanoides		30	Poddubnaja 1931	—	S. Eur., Cau
SERRATULA $x=11, 15$					
tinctoria		22	Maude 1940	—	N. Eur.
radiata	Sawwort	60	Poddubnaja 1931	—	Eur., Cauc.
CIRSIUM (CNICUS) $x=17$					
acaule etc.		34	Wulff 1937b	—	Europe
lanceolatum (*vulgare*) etc.		68	Poddubnaja 1931	—	,,
alpicolum etc.		102	Aishima 1934	—	Japan
CYNARA $x=17$					
scolymus	Globe Artichoke	34	E.K.J.	V	Medit.
cardunculus	Cardoon	—		V	,,
ONOPORDON $x=17$					
acanthium	Scotch Th.	34	Poddubnaja 1931	—	Europe

TRIBE VI: SENECIONEAE

EMILIA (CACALIA) $x=5$					
sagittata	Flora's Paintbrush	10	Afzelius 1924	H	India
sonchifolia		10	,, ,,	H	Trop. Afr. & Asia
CACALIA $x=10$					
suaveolens		40	Afzelius 1924	—	N. America
reniformis		50	,, ,,	—	,,

GYNURA (CRASSOCEPHALUM) $x=10$					
aurantiaca	Velvet Tree	20	Afzelius 1924	H	Java
rubens		20	,, ,,	—	Trop. Africa
crepidioides		40	,, ,,	—	,,
NOTONIA $x=10$					
grandiflora		20	Ganesan 1939	H	India
OTHONNA $x=10$					
carnosa		20	Afzelius 1924	H	S. Africa
ERECHTITES $x=10$					
hieracifolia		40	G. O. Cooper 1936	—	N. & S. Am.
SENECIO (CINERARIA) $x=10, 11, 12, 23$					
elegans etc.	Purple Ragwort	20	Afzelius 1924	H	S. Africa
pendulus		20	Okabe 1931	—	Arabia
cannabifolius (*palmatus*)		40	,, ,,	—	Sib., Sakh.
nemorosus		40	,, ,,	—	Europe
pseudo-arnica		40	,, ,,	—	Arct.
caucasica		44	S. & S. 1940	—	Cauc.
cladobotrys		24	,, ,,	—	,,
campestris		48, 90	,, 1941	—	Eur., N. As.
		46	,, 1938	—	
resedifolius		46	,, ,,	—	Siberia
cineraria etc.	Dusty Miller	40	Afzelius 1924	H	Medit.
heritieri		60	,, ,,	—	Canaries
petasites	Calif. Geranium	60	,, ,,	H	S. Mexico
roberti-friesii		*c.* 180	,, ,,	—	*cult*
MALLOTOPUS $x=9$					
japonicus		18	M. & S. 1935	—	Japan
TRIDAX $x=9$					
procumbens		36	Raghavan & V. '41b	—	Trop. Amer.
ARNICA $x=9, 30$ (Apomixis)					
montana		36	Afzelius 1924	M	Eur., N. As.
alpina		60	,, 1936	H	N. Reg.
unalaschensis		*c.* 40	Sakai 1934	H	Unalaska
LIGULARIA (SENECIO) $x=24, 30$					
altaica		48	S. & S. 1938	—	Altai
japonica		60	Afzelius 1924	H	Japan
sibirica (*ligulana*)		*c.* 60	Sakai 1935a	—	Himalayas
TUSSILAGO $x=30$					
farfara	Coltsfoot	60	Hagerup 1941	M	Eur. etc.
japonica		60	Langlet 1936	—	Japan
PETASITES (TUSSILAGO) $x=26, 29, 30$					
officinalis	Butterbur	52	Maude 1940	M	Eur., Asia
(*hybridus*)		60	Langlet 1936		
niveus etc.		60	,, ,,	H	Europe
frigidus		60	Flovik 1940		Arct. Temp.
japonicus		87	Yamamoto, K. '31	HV	Sakhalin
fragrans	Winter Heliotrope	—		H	Medit.

HOMOGYNE $x=?$					
alpina		c. 135	Langlet 1936	H	Europe
DORONICUM					
plantagineum		—		H	Europe

TRIBE VII: HELENIEAE

GAILLARDIA $x=9$					
aristata (grandiflora)		36	Cooper & M. 1935	H	C: U.S.A.
		72	Atwood 1937		
pulchella		36	Morinaga *et al.* 1929	H	S: U.S.A.
		34 (68)	Schnack 1940		
TAGETES $x=12$					
erecta	African Marigold	24 (48)	Eyster 1939	H	Mexico
patula	French M.	48 (96)	" "	H	"
signata (erecta × patula)		36 (72)	" "	H	*cult*
lucida		—		—	Mexico
HELENIUM $x=17$					
autumnale	Sneezeweed	34	E.K.J.	H	E:N. Amer.

TRIBE VIII: ARCTOTIDEAE

GAZANIA $x=5$					
rigens (splendens)		10	La Cour unp.	H	S. Africa
BERKHEYA $x=7$					
adlami		14	Gelin 1936	—	S. Africa
bergiana		14	" "	—	Rhodesia
URSINIA (SPHENOGYNE) $x=8$					
anethoides		16	Sugiura 1936b	H	S. Africa
anthemoides		16	" 1940	H	"
speciosa		16	" "	H	"
VENIDIUM $x=8$					
calandulaceum (decurrens)		16	Sugiura 1940	H	S. Africa

TRIBE IX: CALENDULEAE

CALENDULA $x=7, 9$					
aegyptiaca	Egyptian M.	14	Negodi 1935	DH	Med., Meso-
officinalis	Pot Marigold	28	" 1936a	DH	S. Europe
suffruticosa	Shrubby C.	28	" "	H	E. Medit.
arvensis		36	" "	H	Eur., S.W. Asia
DIMORPHOTHECA $x=9, 10$					
aurantiaca	Cape Marigold	18	Harrison, T. 1936	H	S. Africa
pluvialis		18	" "	H	"
pseudoaurantiaca		18	" "	H	"
ecklonis		20	" "	H	"

ARTEMISIA	$x=(8)\ 9$ [Triploid Apomictic]				
vulgaris	Indian W.	16	Clausen *et al.* 1940	ID	N. Temp.
v. *typica*		18	Weinedel 1928		
absinthium	Wormwood	18	„ „	IDP	Europe
cina	Levant W.	18	„ „	IM	S.W. Asia
dracunculus	Tarragon	18	„ „	SpE	Eur.—Him.
maritima	Santonin	18	„ „	ID	Eur., Sib.
pontica		18	„ „		Eur.—Turk.
campestris	Sagewort	18	„ „	M	Eur., N. As.
		36	Erlandsson 1939		Ind., S.W. Asia
nitida		27	Chiarugi 1926	Fo	Italy
borealis		18, 36	Erlandsson 1939		N. Arctic
ACHILLEA	$x=9$				
clavennae		18	Chiarugi 1927b	H	Europe
cartilaginea		18	Lewitzky, T. 1936	—	Eur., S.W. Asia
ptarmica	Sneezewort	18	„ „	H	N. Temp.
millefolium	Yarrow	36, 54	Turesson 1938	H	„
ANACYCLUS	$x=9$				
pyrethrum		18	Raves 1926	H	N. Afr., S.W. Asia
ANTHEMIS	$x=9$				
arvensis		18	Wulff 1937b	—	Europe
cotula	Stinking May-weed	18	„ „	—	„
rudolphiana		16	S. & S. 1940	—	Caucasus
tinctoria		18	Holmgren 1915	DH	Eur.—Pers.
nobilis	Chamomile	—		MH	Europe
CHRYSANTHEMUM	$x=9$				
atratum		18	Shimotomai 1937b	H	Europe
cinerariifolium	Dal. Pyr.	18	Tahara 1921	HIM	Dalmatia
coccineum	Pyrethrum	18	„ „	HI	Cauc., Pers.
coronarium		18, 36	Shimotomai & H. 1935	H	Medit.
filifolium		18	Shimotomai 1937b	—	Canary Is.
lavandulaefolium		18	„ „	I	Mongolia
lineare		18	„ „	—	Japan
makinoi (*japonicum*)		18	Shimotomai & T. 1936	—	„
macrophyllum		18	Shimotomai 1937b	H	E. Eur., Cauc.
nipponicum		18	Shimotomai & T. 1936	—	Japan
rotundifolium		18	Shimotomai 1937b	—	Hungary
rupestre		18	Sugiura 1937a	—	Japan

CHRYSANTHEMUM (*cont.*)					
segetum	Corn Marigold	18	Tahara 1921	H	Eur., N. Af., W. Asia
frutescens	Marguerite	27	Shimotomai 1937a	H	Can. Is., *cult*
alpinum		36	„ 1937b	—	Europe
corymbosum		36	„ „	—	Eur., N. Afr.
indicum		36	Shimotomai, T. 1936	BH	China, Japan
ircutianum		36	Shimotomai 1937b	—	Siberia
leucanthemum	Ox-eye Daisy	36	„ „	H	Eur., N. As.
balsamita	Costmary	54	„ „	H	W. Asia
ceratophylloides		54	„ „	—	Europe
japonense (*morifolium*)		54	„ 1933	—	China, Japan
sibiricum		54	Shimotomai & H. 1935	—	Arctic
shimotomaii		54	Shimotomai 1933	—	Japan
weyrichii		54	„ 1937b	—	Sakhalin
decaisneanum		72	„ 1933	—	Japan
ornatum		72	„ „	—	„
zawadskii		72	„ 1937b	—	Galicia
maximum		*c.* 90	Thomas unp.	H	Pyrenees
pacificum (*marginatum*)		90	Shimotomai 1933	—	Japan
yezoense (*arcticum*)		90	„ „	—	Arctic
hybrid clones		52, 58, 68	Hara 1936	H	*cult*
CENIA *x*=9					
turbinata		18	Negodi 1935	—	S. Africa
MATRICARIA *x*=9					
ambigua		18	Tahara 1921	—	Europe
chamomilla	Chamomile	18	Beer 1912	M	Medit.
inodora	Scentless Mayweed	18	Hüser 1930	H	Eur., S.W. Asia
TANACETUM (CHRYSANTHEMUM) *x*=9					
vulgare	Tansy	18	Rosenberg 1905	HMSp	Eur., N. As.
		18	Shimotomai 1937b		
COTULA *x*=10					
coronopifolia	Brass Buttons	20	Wulff 1937b	H	S. Africa

TRIBE XI: EUPATORIEAE

LIATRIS *x*=9					
elegans		18	Langlet 1925	H	N. America
AGERATUM *x*=10					
conyzoides		20	Ishikawa 1916	H	Tropics
houstonianum (*mexicanum*)		20	Cooper & M. 1935	H	Mexico

EUPATORIUM *x*=10, 17 [Triploid Apomictic]

cannabinum	Hemp Agrimony	20	Holmgren 1919	—	Eur., N. As.
ianthinum		20	„ „	—	Mexico
purpureum		20	Cooper & M. 1935	—	S. America
urticaefolium	Wh. Snakeroot	20	„ „	H	Chile, Peru
ageratoides		34	Holmgren 1919	—	N. Amer., W. Ind.
purpusi		34	„ „	—	California
petiolatum		*c.* 34	„ „	—	Mexico
glandulosum		51	„ „	H	„
triplinerve	Ayapana Tea	—		M	Trop. Amer.
villosum	Bitter Beech	—		B	Jamaica

ADENOSTYLES *x*=19 (9 + 10)?

albifrons		38	Langlet 1936	—	Europe
glabra		38	„ „	—	„
alpina		38	„ „	—	„

TRIBE XII: MUTISIEAE

GERBERA (PERDICIUM) *x*=23, 25

anandria		46	M. & S. 1935	H	Sib., Japan
integripetala		46	Kishimoto 1936	H	Formosa
jamesoni	Barberton Daisy	50	„ „	H	Transvaal

239. GENTIANACEAE

SWERTIA *x*=9, 12

perennis		18	Sakai 1935	—	N. Temp.
		24	Woycicki 1937		
chirata	Chiretta	—		M	Himalayas

MENYANTHES *x*=9?

trifoliata	Buckbean	54	Palmgren 1943	M	N. Temp.

GENTIANA *x*=13

altaica, etc.		26	S. & S. 1938	H	Siberia
makinoi		26	Sakai 1934	H	Japan
pneumonanthe		26	Scheerer 1939	H	Eur., N. As.
lutea	Gentian	34-36	Woycicki 1935	HM	Eur.,A. Min.
campestris	Field G.	—		M	„

CENTAURIUM (ERYTHRAEA) *x*=?

pulchellum		*c.* 34	Warburg M. 1939	—	Eur., T. As.
vulgare	Centaury	*c.* 38	Wulff 1937a	—	Europe
		c. 56	Warburg M. 1939		

240. PRIMULACEAE

PRIMULA *x*=8, 9, 10, 11, 12, 13

S. 1: *SOULIEI* *x*=8

rupicola		16	Bruun 1932b	—	Yunnan

S. 2: *INAYATII* *x*=8

inayatii		16	Bruun 1932b	—	E. India

PRIMULA (*cont.*)

S. 3: *FARINOSAE* $x=8, 9, 10, 11$					
(i) *blandula*		16	Bruun 1932b	—	Bur., Tibet
caldaria		16	,, ,,	—	Yunnan
genesteriana		16	,, ,,	—	,,
glabra		16	,, ,,	—	Himalayas
knuthiana		16	,, ,,	—	China
sertulum		16	,, ,,	—	,,
stenocalyx		16	,, ,,	—	,,
(ii) *exigua*		18	,, ,,		North Reg.
farinosa	Birds-eye P.	18, 72	,, ,,	H	,,
farinifolia		18	,, ,,	—	Caucas.
frondosa		18	,, ,,	H	Thrace
fauriei		18	,, ,,	H	Japan
modesta		18	,, ,,	H	North Reg.
longiflora		36	,, ,,	H	Europe
scotica		54, 72	,, ,,		North Reg.
capitellata		72	,, ,,	H	S.W. Asia
magellanica (*decipiens*)		72	,, ,,	—	Magellan
stricta		126	,, ,,	—	N. Eur., Icel.
(iii) *fasciculata*		18	,, ,,	—	Yunnan
chrysopa		20	,, ,,	H	China
yargonensis		20	,, ,,	H	Tibet
tibetica		20	,, ,,	—	,,
involucrata		22	,, ,,	H	Himalayas &
sibirica		44	,, ,,	H	Arct., Asia America
S. 4: *CAPITATAE* $x=9$					
capitata		18	Bruun 1932b	H	Himalayas
crispata		18	,, ,,	H	Sikkim
lacteocapitata		18	,, ,,	—	,,
mooreana		18	,, ,,	H	,,
sphaerocephala		18	,, ,,	H	Yunnan
S. 5: *MALACOIDES* $x=9$					
effusa		18	Brunn 1932b	H	Yunnan
forbesii		18	,, ,,	H	China, Bur.
malacoides		18, 36	,, ,,	H	W. China
S. 6: *VERTICILLATA* $x=9$					
floribunda		18	Bruun 1932b	H	Himalayas
verticillata		18	,, ,,	H	S. Arabia
kewensis (*flor.* × *vert.*)		36	,, ,,	H	*cult*
S. 7: *AURICULA* $x=11$; $x_8=31$ $(9+11+11)$					
palinuri		44	Wanner 1943	H	S. Italy
hortensis		54?	Bruun 1932b	H	*cult*
auricula		62	Wanner 1943	H	C. Europe
hirsuta		62	,, ,,	H	,,
viscosa		62	,, ,,	H	,,
glaucescens		62?	,, ,,	H	Alps
minima		62?	,, ,,	H	C. Europe
marginata		90?	Bruun 1932b	H	Alps

PRIMULA (*cont.*)

S. 8: *MUSCARIOIDES* $x=10$					
atricapilla	20+1−3f	Bruun	1932b	—	Tibet
bellidifolia	20	„	„	—	Himalayas
cernua	20+3f	„	„	—	China
littoniana	20	„	„	H	„
apoclita?	40	„	„	—	Tibet
cyanantha	40	„	„		„
deflexa?	40	„	„	H	W. China
lepta	40	„	„	H	Yunnan
menziesiana	40	„	„	H	Bhutan
S. 9: *SOLDANELLOIDEAE* $x=10$					
buryana	20	Bruun	1932b	—	Himalayas
nutans	20	„	„	H	Yunnan
reidii	20	„	„	H	Kumaon (Him.)
wollastonii	20	„	„	—	Himalayas
S. 10: *YUNNANENSIS* $x=11$					
yunnanensis	22	Bruun	1932b	—	China
S. 11: *MINUTISSIMAE* $x=11$					
reptans	22	Bruun	1932b	—	Himalayas
S. 12: *CUNEIFOLIA* $x=11$					
nipponica	22	Bruun	1932b	H	Japan
suffrutescens Sierra P.	44	„	„	H	California
S. 13: *AURICULATA* $x=11$					
rosea	22	Bruun	1932b	H	Himalayas
elliptica	22	„	„	—	„
algida	44	„	„	H	W. Asia
luteola	44	„	„	H	Caucasus
auriculata	45	S. & S.	1940	H	„
S. 14: *DENTICULATA* $x=11$					
denticulata	22+0-5f	Bruun	1932b	H	Himalayas
as *cachemiriana*	44+8f	„	„		
erythrocarpa	22+0-5f	„	„	—	Bhutan
crispa	44+f	„	„	H	Himalayas
S. 15: *SIKKIMENSIS* $x=11$					
didyma	22	Bruun	1932b	—	Nepal
firmipes	22	„	„	—	Tibet
flexipes	22	„	„	—	„
florindae	22	„	„	H	S.E. Tibet
microdonta	22	„	„	H	China
prionotes	22	„	„	H	Tibet
pseudosikkimensis	22	„	„	H	Yunnan
pudibunda	22	„	„	H	Sikkim
retieulata	22	„	„	—	Himalayas
secundiflora	22	„	„	H	China
sikkimensis	22	„	„	H	Himalayas
vittata	22	„	„	H	W. China

PRIMULA (*cont.*)

S. 16: *CANDELABRA* $x=11$				
anisodora	22	Bruun 1932b	H	Yunnan
aurantiaca	22	” ”	H	”
beesiana	22	” ”	H	China
bulleyana	22	” ”	H	”
burmanica	22	” ”	H	Burma
chungensis	22	” ”	H	Yunnan
cockburniana	22	” ”	H	W. China
helodoxa	22	” ”	H	Yunnan, Bur.
ianthina	22	” ”	—	Sikkim
imperialis	22	” ”	—	Java
melanodonta	22	” ”	—	Bur., Tibet
miyabeana	22	” ”	—	Formosa
morsheadiana	22	” ”	—	S.E. Tibet
poissoni	22	” ”	H	China
pulverulenta	22	” ”	H	”
wilsonii	22	” ”	H	”
japonica	44	” ”	H	Japan
S. 17: *ROTUNDIFOLIA* $x=11$				
gambeliana	22	Bruun 1932b	—	Himalayas
S. 18: *NIVALES* $x=11$				
chionantha	22+2-7f	Bruun 1932b	H	Yunnan
macrophylla	22		—	Himalayas
maximowiczii	22	Brunn 1932b	—	N. China
obliqua	22	” ”	—	Himalayas
purdomii	22	” ”	—	Kansu
russeola	22	” ”	—	Tibet
sinoplantaginea	22	” ”	—	Yunnan
tangutica	22	” ”	—	China
ellisiae	44	” ”	—	N. America
leucops	44	” ”	—	Szechuan
parryii	44	” ”	H	W:N. Amer.
rusbyi	44	” ”	H	New Mexico
S. 19: *PETIOLARES* $x=11$				
winteri	22	Bruun 1932b	H	Himalayas
S. 20: *VERNALES* $x=11$				
amoena	22	Bruun 1932b	H	Pers., Cauc.
balearica	22	” ”	—	Europe
carpatica	22	” ”	—	”
columnae (*veris*)	22	” ”	—	”
elatior Oxlip	22	” ”	—	Eur., A. Min.
heterochroma	22	” ”	—	Persia
ingwerseniana	22	” ”	—	Balkans
intricata	22	” ”	—	Europe
juliae	22	” ”	H	Caucas.
leucophylla	22	” ”	H	Carpathians
lofthousii	22	” ”	—	Spain
macrocalyx (*veris*)	22	” ”	—	Eur., A.Min.

PRIMULA (*cont.*)

pallasii		22	Bruun 1932b	—	Europe
pannonica (veris)		22	„ „	—	„
paxii		22	„ „	H	China
pseudoelatior		22	„ „	—	Caucasus
rhododendricola		22	„ „	—	Spain
ruprechtii		22	„ „	—	Caucasus
sibthorpii		22	„ „	—	Europe
veris	Cowslip	22	„ „	H	Eur., A.Min.
vulgaris	Primrose	22	„ „	H	Europe
S. 21: *MEGASEAEFOLIA* $x=11$					
megaseaefolia		22	Bruun 1932b	—	Asia Minor
S. 22: *GRANDIS* $x=11$					
grandis		44	Bruun 1932b	H	Caucasus
S. 23: *CORTUSOIDES* $x=11, 12, 13$					
(i) *geraniifolia*		22	Bruun 1932b	H	Himalayas
heucherifolia		22	„ „	H	W. China
latisecta		22	„ „	—	Tibet
(ii) *maclareni?*		24	„ „	—	Korea
mollis		24	„ „	—	Himalayas
seclusa		24	„ „	H	Yun., Burma
septemloba		24	„ „	—	China
(iii) *pauliana*		24	„ „	—	Szechuan
(iv) *cortusoides (dentiflora)*		24	„ „	H	Siberia
hymenophylla		24	„ „	—	Tibet
lichiangensis		24	„ „	H	Yunnan
polynerva		24	„ „	—	China
saxatilis		24	„ „	H	Korea
veitchii		24	„ „	H	China
sieboldii		24, 36	„ „	H	Japan
(v) *jesoana*		26	„ „	H	„
S. 24: *BULLATAE* $x=12$					
forrestii		24	Bruun 1932b	H	China
fruticosa		24	„ „	H	*cult*
redolens		24	„ „	—	Yunnan
rufa		24	„ „	H	„
S. 25: *SINENSIS* $x=12$					
calciphila		24	Bruun 1932b	—	Hupeh
sinensis	Chinese P.	24	„ „	H	*cult*
		48	Darlington 1931a		
S. 26: *OBCONICA* $x=12$					
obconica		24, 48	Bruun 1932b	H	China
sinolisteri		24	„ „	—	Yunnan
werringtonensis		24	„ „	—	„
S. 27: *PYCNOLOBA* $x=12$					
pycnoloba		24	Bruun 1932b	—	W. China
S. 28: *REINII* $x=12$					
reinii		24	Bruun 1932b	H	Japan

LYSIMACHIA $x=9, 12, 14$					
nemorum		18	Wulff, T. 1938	—	Europe
clethroides		24	Sugiura 1936a	—	China, Japan
vulgaris		28	Lewitzky 1934	—	Europe
nummularia	Creeping Jenny	36	Wulff 1938	H	„
ANDROSACE $x=9, 10$					
villosa		72	S. & S. 1940	H	Cauc., Him.
septentrionalis	Rock Jasmine	20	Dahlgren 1916	H	N. Hemisph.
HOTTONIA $x=10$					
palustris	Water Violet	40	Wulff 1938	H	Europe
ANAGALLIS $x=10, 11$					
tenella		22	Maude 1940	—	Europe
arvensis	Scarlet Pimpernel	40	Wulff 1937b	—	„
CORTUSA $x=12$					
matthioli		24	Bruun 1932b	—	Eur., N. A.
OMPHALOGRAMMA $x=12$					
farreri		48	Bruun 1932b	H	Burma
elwesianum		96	„ „	H	Himalayas
CYCLAMEN $x=14$					
coum		28	Heitz 1926	—	Gr., A. Min.
pseudograecum		28	„ „	H	*cult*
cilicicum		*c.* 28	„ „	—	A. Minor
europaeum (*hederifolium*)		*c.* 28	„ „	—	Eur., Arm.
africanum		*c.* 32	„ „	—	N. Africa
neapolitanum		*c.* 32	„ „	—	S. & E. Eur.
persicum (*indicum*)		*c.* 48, *c.* 84	„ „	H	*cult*
graecum		*c.* 72	„ „	—	Gr.—Syria
GLAUX $x=15$					
maritima	Black Saltwort	30	Wulff 1937a	—	Temp.
TRIENTALIS $x=?$					
europaea		*c.* 160	Wulff 1937b	—	Subarctic

241. PLUMBAGINACEAE

PLUMBAGO $x=6, 7$					
micrantha		12	Phillips 1938	—	C. Asia
capensis	Leadwort	14	Dahlgren 1916	H	S. Africa
europaea	Common P.	14	Phillips 1938	M	S. Eur., Cauc.
CERATOSTIGMA $x=7$					
plumbaginoides		14	Phillips 1938	H	China
ARMERIA $x=7, 9, 10$					
maritima	Thrift, Sea Pink	14	Fernandes 1931	H	Europe
		18	Griesinger 1937	—	—
alpina (*halleri*)		18	„ „	—	Europe
elongata (*purpurea*)		18	„ „	—	„
vulgaris (*maritima*)		20	Sugiura 1936a	H	*cult*
32 other species		18	Phillips 1938	—	—

LIMONIUM (STATICE) $x=8, 9$					
incanum		16	Sugiura 1936a	—	N. Afr.—Sib.
latifolium		16	„ „	H	Balk.—Cauc.
spicatum		16	„ „	H	Cauc., S.W. Asia
sinuatum		16	„ „	H	Medit.
suworowii		16	„ „	H	C. Asia
		18	Wulff 1937a		
bicolor		16	Sugiura 1939	—	China
bonduelli		16	„ „	—	Algeria
echinoides		32	„ „	—	Medit.
globulariaefolium		64	„ „	H	Asia Minor
binervosum		32	Choudhuri 1942	H	Europe
vulgare	Sea Lavender	32	„ „	H	Eur., Med.
as *S. limonium*		36	Wulff 1937a		Eur., N. Am.
bellidifolium		18	Choudhuri 1942	H	Eur. E. Asia
caspia		18	Aleskowsky 1930	—	Cauc., Sib.
suffruticosum		18	„ „	—	Cauc., C. As.
gmelini		18, 27	„ „	H	Cauc., Sib.
sareptans (*tomentella*)		36	„ „	—	S. Russia
rariflorum		36	Choudhuri 1942		—
neumani (*vulgare*×*rariflora*)		34	„ „	H	*cult*

242. PLANTAGINACEAE

PLANTAGO $x=4, 5, 6$ $x_2=9$ (4+5)					
$x=4$					
ovata	Isfghol	8	MacCullagh 1934	M	N.W. India
$x=5$					
amplexicaulis		10	„ „	—	Med.—N.W. India
bellardi		10	„ „	—	Med., S.W. Asia
coronopus	Buck's Horn	10	„ „	V	Eur., N. As.
cretica		10	„ „	—	E. Medit.
serraria		10	„ „	—	Medit.
acanthophylla		10-12	„ „	—	S. Europe
aristata	Indian Wheat	20	Heitz 1927	Fo	N. & S. Am.
$x=6$					
albicans		12	MacCullagh 1934	—	Medit.
arborescens		12	„ „	—	Canary Is.
arenaria	Whorled Plantain	12	Heitz 1927	M	Eur., A.Min.
argentea		12	MacCullagh 1934	—	Europe
camtschatica		12	„ „	—	N. Amer.?
candollei		12	„ „	—	Chile
carinata		12	„ „	—	S. Eur., A. Min.
cornuti	Siberian P.	12	„ „	—	Siberia
cynops	Shrubby P.	12	„ „	—	Eur., Sib.

PLANTAGO (*cont.*)					
depressa		12	MacCullagh 1934	Fo	Siberia
gentianoides		12	„ „	—	A. Minor
indica	Psyllium	12	Heitz 1927	M	Med.— N.W. Ind.
lagocephala		12	MacCullagh 1934	—	Turkestan
lagopus		12	„ „	—	Med., S.W. Asia
lusitanica		12	„ „	—	Portugal
montana		12	„ „	—	C. Europe
nivalis		12	„ „	—	Spain
psyllium	Fleawort	12	Heitz 1927	M	Med.— N.W. Ind.
saxatilis		12	„ „	Fo	E. Eur., Persia
tibetica		12	MacCullagh 1934	—	Himalaya
sericea		12-14	„ „	—	Peru
maritima		12	Hagerup 1941	V	Eur., N. Am. Arctic
		12 (18), 24	Earnshaw 1942		
lanceolata	Ribwort	12	Nakajima 1930,	Fo	Eur., N. As.
		12	Bøcher 1940		
		24, 96	MacCullagh 1934	Fo	
major		12	Turesson 1938	Fo	Eur.,A.Min.
v. *asiatica*		24	Ikeno 1929		
alpina (*borealis*)		24	MacCullagh 1934	—	C. Europe
brownii		24	„ „	—	Aust., N. Z.
crassifolia		24	„ „	—	Europe
fuscascens		24	„ „	—	France
hirtella		24	„ „	—	N. & S. Am.
media		24	„ „	—	Eur., N. As.
patagonica	Indian Wheat	24	„ „	Fo	N. & S. Am.
serpentina (*carmata*)		24	„ „	—	S.E. A. Min.
tomentosa		24	„ „	—	Argentine
japonica		36	„ „	—	Japan
$x_2=9$					
raoullii		18	„ „	—	New Zeal.

243. CAMPANULACEAE

JASIONE $x=6, 7$					
montana	Sheep's Bit	12	Rosen 1931	—	Eur., N. Af.
		12, 14	Wulff, T. 1937		
perennis		60	Rosen 1931	—	S. Europe
EDRAIANTHUS (WAHLENBERGIA) $x=6$					
graminifolius		24	Rosen 1931	H	Italy
PODANTHUM $x=6$					
limonifolium		24	Rosen 1931	—	S. Eur., A. Minor
sibthorpianum		24	„ „	—	Greece

SPECULARIA (CAMPANULA) $x=7$					
speculum	Venus' Looking Glass	14	Koller unp.	H	S. Europe
PLATYCODON $x=7, 8?$					
grandiflorum		16 28	Marchal 1920 Kihara *et al.*, 1931	H	N. & E. Asia
CODONOPSIS $x=8$					
clematidea		16	Rosen 1931	H	C. W. Asia
subsimplex		16	” ”	H	C. Asia
CAMPANULA $x=8, 10, 13, 14, 17$					
$x=8$					
latiloba (*grandis*)		16	Marchal 1920	H	Asia Minor
phyctidocalyx		16	La Cour unp.	H	Armenia
persicifolia		16, 17, 18, 32	Darlington & G. 1937 & unp.	H	Eur., Sib.
carpatica		32	Koller unp.	H	Carpathians
isophylla		32	Vilmorin & S. 1927b	H	Riviera
pulloides		48	Koller unp.	H	*cult*
alliariaefolia		96	M. & S. 1935	H	A. Min., Cauc.
$x=10$					
loreyi		20	Marchal 1920	H	S. Europe
macrostyla		20	” ”	H	Crimea
rapunculus	Rampion	20	” ”	HV	Eur., N. Af.
steveni v. *nana*		20	Koller unp.	H	Cauc., Pers.
divaricata		40	La Cour unp.	—	N. America
$x=13$					
primulaefolia		26	Marchal 1920	H	Sp., Port.
$x=14$					
erinus		28	Koller unp.	H	Med., Canar.
$x=17$					
barbata		34	Marchal 1920	H	Alps
betonicaefolia		34	” ”	H	Greece
fragilis		34	” ”	—	Adriatic
medium	Canterbury Bell	34	La Cour unp.	H	S. Europe
nobilis		34	Marchal 1920	H	China
portenschlagiana		34	” ”	H	Dalmatia
pusilla		34	” ”	H	Alps
pyramidalis		34	” ”	H	Crotia
trachelium	Nettle-leaved C.	34	” ”	H	Eur., N. Af..
raddeana		34	Rosen 1931	H	Caucasus
thyrsoidea		34	” ”	—	Alps
latifolia	Giant C.	34	Vilmorin & S. 1927b	H	Europe
dasyantha		34	Sakai 1935	—	Sib., W.N. Am.
punctata		34	Sugiura 1937b	—	Sib., Japan

CAMPANULA (*cont.*)					
longestyla		34	Vilmorin & S. 1927b	—	Caucasus
pyraversi		34	„ „	—	—
van Houttii		34	„ „	H	*cult*
allionii		34	La Cour unp.	H	Alps
hypopolia		34	„	—	Temp. Asia
piperi		34	„	—	N. America
“ *rupestris* ”		34	„	—	—
tubulosa		34	„	—	Crete
glomerata		34, 68	Sugiura 1939	H	Eur.—C. As.
rotundifolia (*hostii*)	Harebell	34, 68	Bøcher 1936	H	North Reg.
abietina		68	Sugiura 1937b	H	Sib., Japan
scheuchzeri		68	Bøcher 1936	H	Alps, Arctic
garganica		102	Sugiura 1937b	H	Adriatic
rapunculoides		102	Vilmorin & S. 1927b	V	Europe
as *rapunculus?*		102	Sugiura 1937b		
ADENOPHORA *x*=17					
diplodonta		34	Rosen 1931	H	China
communis (*liliifolia*)		34	Modilewski 1934	H(R)	Europe
remotifolia		34+3f	M. & S. 1935	—	Japan
thunbergiana		34+3f	„ „	—	„
hakusanensis		34, 51	M. & S.; Sakai 1935	—	„
lamarckii		104	„ „	—	Siberia
SYMPHYANDRA *x*=17					
hoffmanni		34	Vilmorin & S. 1927b	H	Bosnia
PHYTEUMA *x*=18					
scheuchzeri		36	Rosen 1931	—	S. Europe
spicatum	Spiked Rampion	36	Armand 1912	(R)	Europe

244. LOBELIACEAE

LOBELIA *x*=7, 8, 9					
cardinalis	Cardinal Fl.	14	Vilmorin & S. 1927b	H	N. America
cliffortiana		14	Sugiura 1936b	—	Trop. Amer.
dresidensis		14	Okuno 1937	—	*cult*
syphilitica		14	„ „	H(M)	S. Africa
urens		14	Vilmorin & S. 1927b	—	Europe
inflata	Ind. Tobacco	14	Okuno 1937	M	N. America
		16	Sugiura 1937b		
triquetra		14, 42	Okuno 1937	—	S. Africa
sessilifolia		28	Sugiura 1937b	—	Kamchatka
erinus		28, 42	Vilmorin & S. 1927b	H	S. Africa
richardsonii		42	Sugiura 1937b	—	—
speciosa		42	„ 1936b	—	S. Africa

LOBELIA (*cont.*)					
tupa	Blood L.	42	Vilmorin & S. 1927b	—	Chile, Peru
ramosa		18	Sugiura 1936a	—	Australia
tenuior		18	„ 1937b	—	„
nicotianaefolia	Wild Tobacco	—		M	Ind., S.W. Asia

245. GOODENIACEAE

BRUNONIA					
australis	Blue Pin-cushion	—		H	Australia
LESCHENAULTIA					
floribunda		—		H	Australia
SCAEVOLA					
koenigii	Taccada Pith Pl.	—		T	Malaya

246. STYLIDIACEAE

STYLIDIUM *x*=?					
adnatum		36	Sugiura 1936a	H	Australia

247. POLEMONIACEAE

HUGELIA *x*=7					
virgata		14	Flory 1937	H	N. America
PHLOX *x*=7					
amoena		14	Flory 1934	H	S.E: U.S.A.
amplifolia		14	„ 1937	H	„
arendsii		14	„ 1934	H	*cult*
argillacea (pilosa)		14	„ „	—	Illinois
bifida	Tenpoint Ph.	14	„ 1937	H	E: U.S.A.
carolina		14+0—2f	Meyer 1944	H	S.E: U.S.A.
divaricata	Blue Phlox	14+0—1f	„ „	H	E: N. Amer.
drummondii		14 (28)	„ „	H	Texas
glaberrima	Meadow Ph.	14	Flory 1934	H	E: U.S.A.
nivalis (subulata)		14	„ 1937	—	S.E: U.S.A.
maculata (longiflora)	Perennial Ph.	14	„ 1934	H	N. Amer., E: U.S.A.
ovata		14	„ „	—	S.E: U.S.A.
paniculata		14	„ 1937	—	E: U.S.A.
pilosa		14	„ 1934	—	E: N. Amer.
stellata		14	„ „	H	*cult*
stolonifera (reptans, procumbens)		14	„ „	H	S.E: U.S.A.
subulata	Moss Pink	14, 28	Meyer 1944	H	E: U.S.A.
suffruticosa		14+0—1f, 21	„ „	H	*cult*
adsurgens	Periwinkle Ph.	14, 21	Flory 1934	H	W:N. Amer.
buckleyi		28	„ 1937	H	W. Virginia
diffusa (douglasii)		28	„ 1934	H	W:N. Amer.
hoodii		28	„ „	H	„

GILIA $x=7, 8, 9$					
aggregata	Skyrocket G.	14	Flory 1937	H	W:N. Amer.
longiflora (collomia)		14	„ „	H	„
rubra (*coronopifolia*)	Texas Plume	14	„ „	H	N. America
capitata		16	Sugiura 1936b	H	W:N. Amer.
		18	Flory 1934		
achilleaefolia	Yarrow G.	18	Langlet 1936	H	California
laciniata		18	„ „	H	Peru, Chile
multicaulis		18	Sugiura 1936b	H	California
rigidula		18	Flory 1937	H	W:N. Amer.
tricolor	Bird's-Eyes	18	„ „	H	California
v. *nivalis*		18	Sugiura 1936b		
multicaulis		18	Flory 1937	H	California
millefoliata (multicaulis)		36	„ „	H	„
COLLOMIA (GILIA) $x=8$					
grandiflora		16	Flory 1937	H	W:N. Amer.
heterophylla		16	„ „	—	„
linearis		16	„ „	H	„
coccinea (biflora)		32	„ „	H	Chile
LINANTHUS (GILIA) $x=9$					
aureus		18	Flory 1937	H	W:N. Amer.
densiflorus		18	„ „	H	California
dianthiflorus		18	„ „	H	„
dichotomus		18	„ „	H	W:N. Amer.
parviflorus		18	„ „	H	„
POLEMONIUM $x=9$					
coeruleum, etc.	Jacob's Ladder	18	Griesinger 1937b	HM	Europe
reptans	Sweat Root	18	Flory 1937	M	N. America
10 other species		18	„ „		—
CANTUA $x=?$					
buxifolia	Magic Fl.	*c.* 54	Flory 1937	H	Peru
COBAEA $x=?$					
scandens		52	Flory 1937, E.K.J.	H	Mexico

248. HYDROPHYLLACEAE

HYDROPHYLLUM $x=9$					
canadense		18	Winkler in T. 1922	H	N. America
NEMOPHILA $x=9$					
aurita	Purple N.	18	Chittenden 1928	H	California
discoidalis		18	Sugiura 1928a	—	W:N. Amer.
integrifolia		18	Chittenden 1928	—	California
maculata	Spotted N.	18	„ „	—	„
menziesii		18	Sugiura 1936a	H	W:N. Amer.
as *atomaria*		18	Chittenden 1928		
as *insignis*		18	„ „		
as *liniflora*		18	„ „		

PHACELIA $x=9, 10, 11$					
congesta		18	Sugiura 1928a	H	Texas
tanacetifolia		18	Tjebbes 1928	H	California
		22	Sugiura 1931		
divaricata		20	” 1939	H	”
campanularia		22	Chittenden 1928	H	”
parryi		22	” ”	H	”
viscida		22	” ”	H	”
whitlavia (minor)		22	” ”	H	”
WIGANDIA $x=11$					
vigieri		44	Sugiura 1936a	H	*cult*
HYDROLEA $x=20\ (9+11)$?					
spinosa		40	Svensson 1925	—	Trop. Amer.

249. BORAGINACEAE

ANCHUSA $x=6, 8, 9, 11$					
myosotidiflora		12	S. G. Smith 1932	H	Sib.,Cauc.
		16	Strey 1931	H	
capensis		16	S. G. Smith 1932	H	S. Africa
officinalis	Alkanet	16	” ”	V	Europe
barrelieri		16	” ”	—	Eur., A.Min.
		18	Lewitzky, T. 1936		
sempervirens		22	S. G. Smith 1932	—	Europe
ochroleuca		24	” ”	—	Transyl., S.W. Asia
italica (azurea)		32	Strey 1931	H	Medit.
MERTENSIA $x=6$					
sibirica		24	Strey 1930	—	E. Siberia
LITHOSPERMUM $x=7, 8$					
tenuiflorum		14, 28	Strey 1931	—	A.M.—Ind.
zollingeri		16	M. & S. 1935	—	Java
latifolium		28	Strey, T. 1931	—	N. America
officinale	Gromwell, Thé de Montagne	*c.* 28	” ”	B	N. Asia
PULMONARIA $x=7, 11$					
officinalis	Lungwort	14	Tarnavschi 1935	HM	Europe
angustifolia		14, 28	” ”		”
saccharata	Jerusalem Sage	14, 16	Strey 1931	Sp	*cult*
		22	Tarnavschi 1935	H	
tuberosa		22	” ”	—	Europe
mollissima (mollis)		28	” ”	—	C. Europe
montana		28	” ”	—	”
LOBOSTEMON $x=7$					
echinoides		14, 42	Levyns 1934	—	S. Africa
glaucophyllus		14, 28	” ”	—	”
bolusii		28	” ”	—	”
decorus		28	” ”	—	”

LOBOSTEMON (*cont.*)					
hispidus		28	Levyns 1934	—	S. Africa
spicatus		28	,, ,,	—	,,
12 other species		14	,, ,,	—	—
OMPHALODES $x=7$					
linifolia		28	Strey, T. 1931	—	S. Europe
CERINTHE $x=8, 9$					
retorta		16	Strey 1931	H	Greece
maculata, etc.		18	Strey T. 1931	H	Medit.
BORAGO $x=8$					
officinalis	Borage	16	Strey 1931	Sp	Eur., N. Afr A. Minor
laxiflora		32	Strey, T. 1931	—	Corsica
ECHIUM $x=8$					
creticum		16	Sugiura 1936b		Medit.
plantagineum		16	,, ,,	H	,,
vulgare, etc.	Viper's Bugloss	32	Strey 1931	M	Europe
MYOSOTIS $x=6, 7, 8, 9$					
parviflora		18	Geitler 1936	—	—
sparsiflora		18	,, ,,	—	Eur., N. As
sylvatica	Wood F.	18, 32	,, ,,	H	N. Temp.
alpestris		24, 48, 72	,, ,,	H	Eur., N. As
(*pyrenaica, sylvatica*)		14	S. & S. 1941		
stricta		c. 36	Winge 1917	—	,,
collina (*hispida*)	Early F.	48	Geitler 1936	H	Europe
arvensis	Field F.	c. 54	,, ,,	H	,,
palustris (*scorpioides*)	Forget-me-not	22, 64	,, ,,	H	Eur., Asia
caespitosa (*laxa*)		c. 80	Strey 1931	—	North Reg.
SYMPHYTUM $x=9?$					
asperum (*asperrimum*)	Prickly Comfrey	c. 36	Strey 1931	H	E. Eur., Persia
caucasicum		c. 36	,, ,,	—	Caucasus
officinale		c. 36	,, ,,	H	Eur., Asia
uplandicum (*orientale*)		c. 36	,, ,,	H	S.W. Asia
bulbosum		c. 72	,, ,,	—	Europe
tuberosum		c. 72	,, ,,	—	S. Europe
ALKANNA $x=11$					
orientalis		22	Strey, T. 1931	D?	S.W. Asia
tinctoria	Alkanet	—		D	,,
HELIOTROPIUM $x=12$					
europaeum		24	Svensson 1925	H	S. Europe
arborescens (*peruvianum*)	Heliotrope	—		HP	Peru

CORDIA					
dichotoma		—		Fo	India
fragrantissima		—		W	,,
myxa	Assyrian Plum	—		WF	Trop. & S.W. Asia
vestita	Selu	—		WF	Himalayas
sebestena	Aloe Wood	—		H	Cuba

250. SOLANACEAE

PETUNIA $x=7, 9$					
axillaris (*nyctaginiflora*)		14	Kostoff *et al.* 1935	H	Argentine
parodii		14	Steere 1931		,,
violacea (*integrifolia*)		14 (21, 28, 35)	Dermen 1931a	H	*cult*
		(28)	Levan 1937a		
parviflora		18	Ferguson & C. 1932	—	Argentine
CESTRUM $x=?$					
nocturnum	Night Jasmine	*c.* 16	Bhaduri 1933	H	W. Indies
FABIANA $x=9$					
imbricata	False Heath	18	Goodspeed 1933	M	Peru
NIEREMBERGIA $x=9$					
frutescens	Tall Cup Flower	18	Goodspeed 1933	H	Chile
NICOTIANA $x=8, 9, 10, 11, 12$					
(i) American Group, diploid series					
$x=8$					
commutata		16?	Ghimpu 1933	—	—
$x=9$					
alata (*affinis*)	Jasmine Tobacco	18	Goodspeed 1933	H	Brazil
forgetiana		18	,, ,,	H	,,
sanderae		18	,, ,,	H	*cult*
bonariensis		18	,, ,,	—	Argentine
langsdorffii		18 (19)	Kostoff 1935	—	Brazil
$x=10$					
longiflora		20	Resende 1937	H	Chile
plumbaginifolia		20	Bhaduri 1935	H	Trop. & N. Amer.
$x=11$					
angustifolia		22?	Ghimpu 1933	—	Chile
$x=12$					
acuminata		24	Goodspeed 1933	—	S. America
attenuata	Coyote T.	24	,, ,,	M	W.N. Amer.
benavidesii		24	,, 1938	—	Peru
cordifolia		24	,, 1933	—	Juan Fern.
corymbosa		24	,, ,,	—	Chile
caudigera		24	,, ,,	—	,,
cavanillesii		24	,, ,,	—	Mexico
glutinosa		24	,, ,,	—	S. America
knightiana		24	,, 1938	—	Peru

NICOTIANA (*cont.*)					
miersii		24	Kostoff *et al.* 1935	—	Chile
noctiflora		24	" " "	—	"
paniculata		24	Goodspeed 1935a	—	S. America
pampasana		24	" 1933	—	Argentine
raimondii		24	" 1935a	—	Peru
setchelli		24	Greenleaf 1942	—	"
solanifolia		24	Goodspeed 1935a	—	Chile
silvestris		24	" 1935b	—	Argentine
tomentosa	Giant T.	24	" 1933	—	Peru
tomentosiformis		24	" "	—	Bolivia
trigonophylla	Desert T.	24	" "	M	W:N. Amer.
undulata		24	" 1935a	—	Peru
wigandioides		24	" 1933	—	Andes
glauca	Tree T.	24, 48	Pratasenja 1937	—	Argentine
bigelovi	Indian T.	48	Modilewski 1937	M	W:N. Amer.
nesophila		48	Goodspeed 1933	—	Mexico
nudicaulis		48	" "	—	N. Mexico
quadrivalvis		48	Ghimpu 1933	M	W:N. Amer.
repanda		48 (96) 48	Goodspeed 1933, Sarana 1934	—	Mexico
rustica	Aztec T.	48	Ternovsky 1935	IM	"
stocktoni		48	Goodspeed 1933		"
tabacum	Common T.	48	Vilmorin & S. 1927a	IM	Peru *cult*
		(72)	Goodspeed 1930		
		(96)	" "		
digluta (*glut.* × *tabacum*)		72	Clausen & G. 1925	—	*expt.*
(ii) Australasian Group, tetraploid series					
$x=8$					
exigua		32	Wheeler 1935	—	Queensland
suaveolens		32, 64	" "	H	S.E. Austr.
maritima		32	" "	—	S. Australia
$x=9$					
gossei		36	" "	—	C. Australia
$x=10$					
goodspeedii		40	" "	—	S. Australia
megalosiphon		40	" "	—	N.E. Austr.
$x=11$					
rotundifolia		44	" "	—	S.W. Austr.
$x=12$					
debneyi		48	" "	—	N.E. Austr. New Caled
NICANDRA $x=9+$isochromosome					
physaloides		19, 20 (40)	Janaki Ammal 1932 & unp.	HM	Peru
SCHIZANTHUS $x=10$					
pinnatus		20	Sugiura 1937b	H	Chile
retusus		20	" "		Chile, Peru
wisetonensis		20	" 1936b	H	*cult*

BROWALLIA $x=11$					
demissa		22	Sugiura 1936a	H	S. America
as *elata*		22	„ „		
grandiflora		22	„ „	H	Peru
viscosa		22	„ „	—	S. America
speciosa		44	„ „	H	Chile
BRUNFELSIA $x=11$					
americana		22	Bhaduri 1933	H	Trop. Amer.
calycina		22	E.K.J.	H	Brazil
hydrangeaeformis	Mire Raintree	—		M	„
SALPIGLOSSIS $x=11$					
sinuata		44	Vilmorin & S. 1928	H	Chile
SOLANDRA $x=12$					
grandiflora		22-24	Campin 1924	H	Trop. Amer.
		24	E.K.J.		
CAPSICUM $x=12$					
annuum	Chilli, Red Pepper, Paprika	24 (36, 48)	Pal *et al.* 1941	SpVVit	Trop. Am., *cult*
as *baccatum*		24	Huskins & L. C. 1930		
		(12)	Christensen *et al.* 1943		
		(48)	Györffy 1939		
as *frutescens*	Cayenne P., Bird P.	24	E.K.J.		
CYPHOMANDRA $x=12$					
betacea	Tree Tomato	24	Whitaker 1933a	F	S. America
DATURA $x=12$					
ceratocaula		24	Buchholz *et al.* 1935	—	Trop. Amer.
discolor		24	„ „	—	Mexico
fastuosa		24	Vilmorin & S. 1927a	M	Tropics
ferox		24	Buchholz *et al.* 1935	M	China
innoxia		24	„ „	M	Tropics
leichhardtii		24	„ „	—	Australia
metel		24	„ „	—	Trop. Amer.
meteloides		24	„ „	M	W. N. Amer.
pruinosa		24	„ „	—	Mexico
quercifolia		24	„ „	—	„
stramonium	Thorn Apple, Jimson Weed	24	Blakeslee 1928	HM	Trop., Sub-trop.
		(13), (25) (26)	Satina *et al.* 1937		
		(48)	Belling & B. 1923		
arborea	Maikoa	—		M	S. America
JABOROSA $x=12$					
integrifolia		24	E.K.J.	H	Argentine

LYCIUM $x=12$					
chinense	Box Thorn	24	Sugiura 1936b	H	China
PHYSALIS $x=12$					
alkekengi	Winter Cherry Chin. Lantern Pl.	24	Yamamoto & S. 1932	FH	Eur.—Japan
philadelphica	Purple Winter C.	24	Vilmorin & S. 1928	FH	N. America
pubescens	Barbados G.	24	Vilmorin & S. 1927a	F	,,
angulata	Ground Cherry	24 48	Nakajima 1931 Yamamoto & S. 1932	F	Eur., Japan
peruviana	Cape Gooseberry	24 48	,, ,, Vilmorin & S. 1928	F	Trop., Sub-Trop.
minima	Sunberry	48	Bhaduri 1933	FV	Tropics
lanceolata	Strawberry T.	—		F	W:N. Amer
viscosa		—		F	Trop. Amer
virginiana		—		F	N. America
SALPICHROA (WITHANIA) $x=12$					
rhomboidea (*origanifolia*)	Huevo de Gallo	24	Vilmorin & S. 1928	V	Argentine
SCOPOLIA $x=12$					
lurida		24	Vilmorin & S. 1928	—	Himalayas
LYCOPERSICUM (SOLANUM) $x=12$					
esculentum	Tomato	24 (12) (36, 48)	Vilmorin & S. 1927a Lindstrom 1929 Jørgensen 1928a Upcott 1935	VF	*cult*, Peru
cheesemannii		24	Luckwill 1943	—	Galapagos
glandulosum		24	,, ,,	—	Peru
hirsutum		24	,, ,,	—	Peru, Ecua
peruvianum		24	,, ,,	—	Peru
pimpinellifolium		24	,, ,,	—	,,
pissisi		24	,, ,,	—	Peru, Chile
SOLANUM $x=12$					
(i) Non-Tuberous Group					
aethiopicum		24	Vilmorin & S. 1928	H	Trop. Afr. Asia
auriculatum		24	,, ,,	H	Trop. Asia
capsicastrum	Jerusalem Cherry	24	,, ,,	H	Brazil
cornutum		24	,, ,,	H	Mexico
dulcamara	Bittersweet	24	,, ,,	H	Eur., N. A
gracile		24	,, ,,	HV	Trop. Ame
jasminoides		24	,, ,,	H	Brazil
indicum		24	Bhaduri 1935	M(V)	O.W. Trop
integrifolium	Scarlet E. P.	24	Vilmorin & S. 1928	H	Africa
marginatum		24		—	Trop. Afr.

SOLANUM (*cont.*)

melongena	Egg Plant Aubergine	24 (36, 48)	Janaki Ammal 1934	V	O.W. Trop.
muricatum	Pepino	24	Vilmorin & S. 1927	V	Peru
pseudocapsicum	Jerusalem Cherry	24	„ „	H	Old World
tomatillo		24	Jørgensen 1928	V	Chile
torvum		24	Bhadhuri 1933	V	O.W. Trop.
trilobatum		24	„ „	(V)	„
verbascifolium		24	„ „	(V)	„
wendlandi		24	Vilmorin & S. 1928	H	Costa Rica
xanthocarpum		24	Bhaduri 1933	HMV	O.W. Trop.
luteum (*nigrum*)		48	Jørgensen 1928	FV	Cosmop.
miniatum (*alatum*)		48	Tokunaga 1934	V	„
guineense (*nigrum*)	Sunberry	72	Vilmorin & S. 1927	FV	„
memphiticum (*nigrum*)		72	Jørgensen 1928	—	„
robinsonianum		72	„ „	—	J. Fernandes
nigrum	Black Nightshade	72 (96, 144)	„ „	FV	Cosmop.
		24, 48	Bhaduri 1933		
quitoënse	Naranjilla	—		F	Peru
macranthum (*wrightii*)	Potato T.	—		H	Brazil

(ii) Tuberous Group

abbotianum		24	Bukasov 1938	—	Peru
ajanhuiri		24	Rybin 1933	R	Bolivia
anomalocalyx		24	Hawkes 1943	—	„
aracc-papa		24	Rybin 1933	—	Peru
ascasabii		24	Hawkes 1944	R	Ecuador
ballsii		24	„ „	—	Argentine
berthaultii		24	„ „	—	Bolivia
boergeri		24	Bukasov 1938	—	Uruguay
boliviense		24	Hawkes 1944	R	Bolivia
boyacense		24	Rybin 1933	R	Colombia
brevidens		24	„ „	—	Chile
brevimucronatum		24	Hawkes 1944	—	Bolivia
bukasovii		24	Rybin 1933	—	Peru
bulbocastanum		24	Bukasov 1935	—	Mexico
calcense		24	Hawkes 1944	—	Peru
canasense		24	„ „	—	„
caniarense		24	Bukasov 1935	R	Ecuador
cardenasii		24	Hawkes 1944	R	Bolivia
catarthrum		24	Bukasov 1938	—	Peru
chacoense		24	H. B. Smith 1927	—	Paraguay
churuspi		24	Hawkes 1943	R	Peru
emmeae		24	Bukasov 1938	—	Argentine
erlansonii		24	„ 1935	R	Andes
fernandezianum		24	Rybin 1933	—	J. Fernandes
fragariaefructum		24	Hawkes 1944	—	Peru
garciae		24	Bukasov 1938	—	Argentine

SOLANUM (*cont.*)

gibberulosum		24	Bukasov	—	Argentine
glanduliferum		24	Hawkes 1944	—	”
goniocalyx		24	Sepeleva 1937	R	Peru
jamesii		24	H. B. Smith 1927	—	”
jujuyense		24	Hawkes 1944	—	Argentine
kesselbrenneri		24	Sepeleva 1937	R	Ecuador
knappei		24	Bukasov 1938	—	Argentina
lanciforme		24	Hawkes 1944	—	Mexico
lapazense		24	” ”	—	Bolivia
laplaticum		24	Ratera 1938	—	Argentine
lechnoviczii		24	Hawkes 1944	—	Peru
looseri		24	Rybin 1933	—	Chile
macolae		24	Bukasov 1938	—	Argentine
mechonguense		24	” 1940	—	”
mercedense		24	” ”	—	Uruguay
multidissectum		24	Hawkes 1944	—	Peru
ohrondii		24	Bukasov 1935	—	Uruguay
pampasense		24	Hawkes 1944	—	Peru
parodii		24	Bukasov 1938	—	Argentine
phureja		24	Rybin 1933	R	Bolivia
platypterum		24	Hawkes 1944	—	Argentine
polyadenium		24	Bukasov 1935	—	Mexico
riobambense		24	” ”	R	Ecuador
rionegrinum		24	Kameraz 1940	—	Uruguay
rybinii		24 (48)	Rybin 1933, 1940	R	Colombia
saltense		24	Hawkes 1944	—	Argentine
schickii		24	Bukasov 1938	—	”
simplicifolium		24	Hawkes 1944	—	”
sorianum		24	Bukasov 1940	—	Uruguay
soukupii		24	Rybin 1933	—	Peru
stenotomum		24	” ”	R	Peru, Bol.
subtilius		24	Sepeleva 1937	—	Argentine
tarijense		24	Hawkes 1944	—	Bolivia
vavilovii		24	Sepeleva 1937	—	Peru
verrucosum		24	Bukasov 1935	—	Mexico
yabari		24	Hawkes 1944	R	Peru
millanii		24, 36	Bukasov & L. 1935	—	Argentine
cardiophyllum		36	Hawkes 1944	R	Mexico
chaucha		36	Rybin 1933	R	Peru, Bol.
chocclo		36	Bukasov 1933	R	Andes
coeruleiflorum		36	Hawkes 1944	R	Peru
commersonii	Swamp P.	36	Rybin 1933	—	Arg., Uruguay
coyoacanum		36	” ”	—	Mexico
cuencanum		36	Bukasov 1935	R	Ecuador
juzepczukii		36	Rybin 1933	R	Peru, Bol.
maglia	Maglia	36	” ”	R	Chile
mamilliferum		36	” ”	R	Peru
medians		36	” ”	R	”

SOLANUM (*cont.*)					
tenuifilamentum		36	Bukasov 1933	R	Peru, Bol.
vallis-mexici		36	Rybin 1933,	—	Mexico
		(72)	Perlova 1939		
		(72)	Tetry 1941		
acaule		48	Rybin 1933	—	Peru, Bol., Arg.
ajuscoënse		48	„ „	—	Mexico
andigenum		48	„ „	R	Andes
		(24)	Müntzing 1937c		
antipoviczii		48	Rybin 1933	—	Mexico
colombianum		48	„ „	—	Ven., Col., Ecu.
depexum		48	Bukasov 1938	—	Argentine
fendleri	Navajo P.	48	Smith 1927	R	Mexico
herrerae		48	Bukasov 1938	—	Peru
fonckii		48	Rybin 1933	—	Chile
leptostigma		48	Bukasov 1935	—	„
longipedicellatum		48	Hawkes 1944	—	Mexico
malinchense		48	„ „	—	„
molinae		48	Bukasov 1935	—	Chile
neoantipoviczii		48	Rybin 1933	—	Mexico
punae		48	Bukasov 1938	—	Peru
schreiteri		48	„ „	—	Andes
subandigenum		48	Hawkes 1944	—	Bolivia
sucrense		48	„ „	—	„
tlaxcalense		48	„ „	—	Mexico
tuberosum	Potato	48	Vilmorin & S. 1927a	AR	Peru, *cult*
		(24)	Lamm 1937		
		(96)	Vilmorin & S. 1928		
venezuelicum		48	Bukasov 1938	—	Venezuela
wittmackii		48	„ 1935	—	Peru
curtilobum		60	Rybin 1933	R	Peru, Bol.
edinense		60	„ 1930	R	—
salamanii		60	Hawkes 1944	—	Mexico
semidemissum		60	Rybin 1933	—	„
demissum		72	Salaman 1928	—	„
tub. × *antipoviczii*		72	Ivanov 1939	R	*expt.*
SARACHA $x=12$					
umbellata		48	Krenke 1930	—	Peru
WITHANIA $x=12$					
somnifera		48	Bhaduri 1933	M	O.W. Trop., Med., S.W. Asia
coagulans	Panirband	—		M	Afg., N. Ind.
ATROPA $x=12$					
belladonna	Deadly Nightshade	72	Vilmorin & S. 1928	M	Eu., S.W. Asia, India
baetica		72	Fardy 1940	—	Spain

HYOSCYAMUS $x=14, 17$					
muticus	Indian Henbane	28	Griesinger 1937	M	Egypt, A. Minor
niger	Henbane	33, 34	„ „	M	Eur., W. As., Him.
		34	Vilmorin & S. 1928		
aureus	Yellow H.	—		M	S.W. Asia
DUBOISIA					
hopwoodi	Pituri	—		M	W. Australia

250a. NOLANACEAE

NOLANA $x=12$					
atriplicifolia		24	Datta 1933a	—	Chile, Peru
prostrata		24	„ „	—	„
grandiflora		24	Sugiura 1936b	H	„
tenella		24	„ „	—	„

251. CONVOLVULACEAE

CUSCUTA $x=7$					
cupulata		14	Finn 1937	Par	Spain
epithymum	Lesser Dodder	14	„ „	Par	Eur., A.Min.
europaea	Greater Dodder	14	„ „	Par	Eur., S.W. Asia
viciae		14	„ „	ParM	„ „
approximata		28	„ „	Par	Spain
monogyna		28	„ „	Par	Eur., S.W. Asia
reflexa		28	„ „	ParM	India
epilinum		42	„ „	Par	E. Eur., Asia
arvensis		56	„ „	Par	N. America
CONVOLVULUS $x=10, 11$					
tricolor		20	Kano 1929	H	S. Europe
elongatus		22	Heitz 1926	—	Canaries
siculus		44	„ „	—	Medit.
undulatus		*c.* 22	„ „	—	„
scammonia	Scammony	*c.* 24	„ „	M	S.E. Eur., A. Minor
arvensis	Lesser Bindweed	50	Wolcott 1937	—	Temp.
CALYSTEGIA $x=11$					
sepium	Bindweed	22	Kano 1929	M(V)	Temp.
		24	Wolcott 1937		
soldanella	Sea B.	22	Kanô 1929	(V)	Temp.
spithamaeus		22	Wolcott 1937	—	N. America
QUAMOCLIT (IPOMOEA, MINA) $x=14, 15$					
angulata		28	Nakajima 1931	—	Brazil
coccinea	Star Glory	28	King & B. 1937	H	Arizona
lobata (versicolor)		28	„ „	H	Mexico
		30	Sugiura 1936b		
		28	Nakajima 1931		
pennata	Cypress Vine	30	King & B. 1937	—	S.E. U.S.A.
sloteri (pennata × coccinea)		58	„ „	H	*cult*

EXOGONIUM (IPOMOEA) $x=14$?					
purga	Jalap	24-28	Heitz 1926	HM	Mexico
MERREMIA (IPOMOEA) $x=15$					
distillatoria (*campanulata*)	Ulan	30	King & B. 1937	M	Ind., Malaya
OPERCULINA (IPOMOEA) $x=15$					
dissecta		30	King & B. 1937		Trop. Amer.
tuberosa		30	" "	H	Tropics
turpethum	Ching-Chaw	—		M	Indo-China
CALONYCTION (IPOMOEA) $x=15$					
aculeatum (*speciosum*)	Moonflower	30	Kano 1929	H(V)	Trop. Amer.
muricatum	Small M.	—		H(V)	Him., Japan
tuba	Trumpet M.	—		H	Florida, W. Ind.
IPOMOEA (PHARBITIS) $x=15$					
arborescens		30	King & B. 1937	—	Mexico
biloba	Pohne	30	Sugiura 1936a	FoS-B (V)	Tropics
as *pescaprae*		30	King & B. 1937		
cairica (*palmata*)		30	" "	—	Egypt, O.W. Trop.
carolina		30	Wolcott 1937	—	W. Indies
digitata		30	King & B. 1937	M(V)	Tropics
hederacea	Ivy-leaf M.G.	30	" "	M(V)	"
lacunosa		30	" "	—	N. America
learii	Dawnflower	30	" "	—	Trop. Amer.
leptophylla	Man Root	30	" "	R	W:N. Amer.
nil	Jap. M.G.	30	" "	H	Tropics
pandurata		30	" "	—	Trop. Amer.
purpurea	Morning Glory	30	" "	H	"
ruber		30	" "	—	N. America
rubrocoerulea		30	" "	—	Mexico
sagittata		30	" "	—	N. Amer., W. Indies
setosa	Brazilian M.G.	30	" "		Brazil
violacea		30	" "	H	Sta. Cruz
ramouri		60	" "	—	Cuba
batatas	Sweet Potato	c. 90	" "	R	Trop. Amer.
chrysorhiza	Kumarah	—		R	New Zeal.

252. SCROPHULARIACEAE

(1) Non-Parasitic Group

NYCTERINIA (ZALUZIANSKIA) $x=6$				
capensis	12	Sugiura 1936a	H	S. Africa
selaginoides (*villosa*)	12	" "	H	"
ALONSOA $x=6$				
warscewiczii (*grandiflora*)	24	Propach 1934	H	Peru

LINARIA *x*=6, 7, 8					
barbata		12	M. & S. 1935	—	S. Africa
bipartita		12	Heitz 1927	H	Port., N. Af.
maroccana		12	,, ,,	H	Morocco
repens		12	Tjebbes 1928	—	Europe
reticulata		12	Heitz 1927	H	Port., N. Af.
vulgaris	Toadflax	12	East 1933	M	Eur., Cauc.
30 other species		12	Heitz 1927		—
triphylla		12, 14	East 1933	—	Medit.
pancicii		16	Heitz 1927	—	Macedonia
chalepensis		24	,, ,,	—	S. Eur., S.W. Asia
CYMBALARIA (LINARIA) *x*=7					
muralis	Wall Ivy	14	Heitz 1927	—	Europe
pallida		14	,, ,,	—	Italy
aequitriloba		*c.* 42	Bruun 1932b	—	Corsica
hepaticifolia		*c.* 42	Heitz 1927	H	,,
pilosa		42	Bruun 1932b	H	Italy
KICKXIA (LINARIA, *not* APOCYNACEAE) *x*=9					
2 species		18	Bruun 1932b	—	—
ANARRHINUM (LINARIA) *x*=9					
bellidifolium		18	Heitz 1927	—	Medit.
laxiflorum		18	,, ,,	—	Spain
CHAENORRHINUM (LINARIA) *x*=7					
litorale etc.		14	Heitz 1927	—	Adriatic
ELATINOIDES (LINARIA) *x*=7?					
spuria		*c.* 14	Heitz 1927	—	Eur., N. Afr.
COLLINSIA *x*=7					
bartsiaefolia		*c.* 14	Hiorth 1933		California
bicolor		14	,, ,,	H	,,
candidissima		14	Sugiura 1936b		—
barts. × *bicolor*		(21, 28)	Hiorth 1933	—	*expt.*
REHMANNIA (SPARMANNIA) *x*=7					
angulata		28	Sugiura 1936a	H	China
DOPATRIUM *x*=7					
lobelioides		14	Raghavan & S. 1940b	—	India
STEMODIA *x*=7					
viscosa		42	Raghavan & S. 1942	—	Ind., Afgh.
VANDELIA *x*=7					
crustacea		42	Raghavan & S. 1940b	—	Tropics
DIGITALIS *x*=7 or 28					
ambigua	Yellow F.	56	Buxton & N. 1928	H	S. Europe
canariensis		56	Haase-Bessel, T. 1931		Canary Is.

DIGITALIS (*cont.*)					
dubia		56	Regnart 1935	H	Balearics
purpurea	Foxglove	56	Buxton & N. 1928	HM	Europe
lanata	Grecian F.	56	Buxton & D. 1934	M	Danube
obscura		56	,, ,,	—	Greece
viridiflora		56	Buxton & N. 1928	—	Gr., Maced.
mertonensis (*purp.* × *ambigua*)		112	Buxton & D. 1932	H	*cult*
eriostachya		112	Buxton & D. 1934	—	S. Europe
lutea		112	,, ,,	—	,,
obscura		112	,, ,,	—	Spain
PENTSTEMON (CHELONE)		*x*=8			
barbatus		16	Sugiura 1936b	H	Colorado
diffusus		16	Heitz 1927	H	Oreg.—B.C.
laetus		16	J. Clausen 1933	—	California
ovatus		16	Piotrowska, T. 1936	H	N.W: U.S.A.
venustus		16? 64	J. Clausen 1933	—	W:N. Amer.
cristatus (*erianthera*)		16	La Cour unp.	H	N.W: U.S.A.
moffatti		16	,, ,,	H	California
roeylii		16	,, ,,	H	W:N. Amer.
scouleri		16	,, ,,	H	,,
speciosus (*glaber*)		16	,, ,,		N.W: U.S.A.
menziesii		16	,, ,,	H	B. C.—Oreg.
kingii		32	,, ,,		W:N. Amer.
azureus		32, 48	J. Clausen 1933	—	California
frutescens		40	M. & S. 1935	—	Jap., Kamch.
cobaea		64	Piotrowska, T. 1936	H	S.E: U.S.A.
neotericus (*laetus* × *azureus*)		64	J. Clausen 1933	—	California
laevigatus		96	La Cour 1931	—	S.E: U.S.A.
ANTIRRHINUM		*x*=8			
majus	Snapdragon	16	Propach 1935	H	Medit.
		(32)	Bamford & W. 1941		
molle		16	Lawrence 1930	H	Pyrenees
orontium		16	Heitz 1927	H	Europe
glutinosum		16	Baur 1932	—	Spain
hispanicum		16	,, ,,	—	,,
ibanyczii		16	,, ,,	—	—
latifolium		16	,, ,,	—	Europe
liukianum		16	,, ,,	—	,,
litigiosum		16	,, ,,	—	Spain
meonanthum (*sempervirens*)		16	,, ,,	—	Pyrenees
ramosissimum		16	,, ,,	—	Algeria
sempervirens		16	,, ,,	—	Pyrenees
siculum		16	,, ,,	—	Sicily
tortuosum		16	,, ,,	—	W. Medit.
ASARINA (ANTIRRHINUM)		*x*=9			
procumbens		18	Heitz 1927	—	Italy

MAURANDIA (ANTIRRHINUM) $x=10, 12$

scandens (*lophospermum*)		20	Sugiura 1937a	H	Mexico
antirrhiniflora		24	Heitz 1927	H	S.W: U.S.A.
barclayana		24	„ „	H	Mexico
purpurea		24	Sugiura 1937a	—	„

MIMULUS (DIPLACUS) $x=8$

cardinalis	Monkey Flower	16	Brozek 1932	H	W: U.S.A.
betonicifolia		32	Sugiura 1940		Chile
guttatus (*langsdorfii*)		48	Maude 1940	H	W:N. Amer.
moschatus	Musk	—		—	W: U.S.A.
quinquevulnerus (*luteus*)		*c.* 64	Brožek 1932	H	Chile
tigrinus		*c.* 64	„ „	H	*cult*
tigrinoides		*c.* 64	„ „	H	„

VERBASCUM $x=8, 15, 18$

nigrum	Dark Mullein	30	Håkansson 1926	M	Eur., A. Min.
blattaria	Moth M.	30, 32	„ „	—	Eur., N. As.
chaixii		32	„ „	—	S.W. Eur.
lychnitis	White M.	32	„ „	—	Eur., Cauc.
phlomoides		32	„ „	—	Europe
pulverulentum	Hoary M.	32	„ „	—	„
thapsiforme		32	„ „	HM	Eur., A.Min.
virgatum		32	„ „	—	„
phoeniceum	Purple M.	32	M. & S. 1935	—	Eur., N. As.
		36	Lawrence 1932	H	
thapsus	Great M.	34, 36	Håkansson 1926	—	Eur.—Him.
ternacha		48	„ „	—	Abyssinia
maurum		64	„ „	—	Morocco

TORENIA $x=8, 9$

asiatica		16	Simon & L. 1930	H	Trop. Asia
bailloni (*flava*)		16	Sugiura 1936b	H	„
fournieri		18	„ „	H	Cochin-Ch.
edentula (*peduncularis*)		18	Simon & L. 1930	H	Malaya

LIMOSELLA $x=9$

aquatica		36	Svensson 1928	—	N. & S. Temp.

NEMESIA $x=9$

affinis		18	Heitz 1927	—	S. Africa
barbata		18	„ „	—	„
bicornis		18	„ „	—	„
compacta		18	„ „	—	„
floribunda		18	„ „	—	„
foetens		18	„ „	—	„
hybrida		18	„ „	H	*cult*
lilacina		18	„ „	H	S. Africa
strumosa		18	„ „	H	„
versicolor		18	Propach 1934	H	„

NEMESIA (*cont.*)					
pulchella		18	La Cour unp.	H	S. Africa
chamaedrifolia		18	„ „	H	„
macroceras		18	„ „	—	„
pagei		18	„ „	—	„
anisocarpa		18	„ „	—	„
azurea etc.		18	„ „	—	„
CALCEOLARIA $x=8, 9, 30$					
angustifolia		18	Srinath 1940	H	Chile
banksii		18	„ „	H	*cult*
cana		18	La Cour unp.		Chile
clibranii		18	Srinath 1940	H	*cult*
crenatiflora		18	La Cour unp.	H	Chiloe Is.
dentata		18	„ „	H	Chile
integrifolia		18	„ „	H	„
pratensis		18	„ „	H	„
alba		36	„ „	H	„
polyrrhyza		36	„ „	H	Patagonia
hyssopifolia		32	„ „	H	Ecuador
mexicana		60	Srinath 1940	H	Mexico
SCROPHULARIA $x=9, 10$					
nodosa	Figwort	36	Scheerer 1939	M	N. Temp.
vernalis		40	Håkansson 1926		Europe
umbrosa (*aquatica*)	Water Betony	80	Maude 1940	M	Eur., Cauc.
DIASCIA $x=9$					
barbarea		18	Propach 1934	H	S. Africa
ANGELONIA $x=10$					
grandiflora (*salicariaefolia*)		20	Raghavan & S. '40b	H	Brazil
cubensis		20	„ „	H	Cuba
RUSSELIA $x=10$					
juncea		20	Raghavan & S. '40b	H	Mexico
rotundifolia		20	„ „	H	„
SCOPARIA $x=10$					
dulcis		40	Raghavan & S. '40b	—	Tropics
LAGOTIS $x=11$					
glauca		22	Sakai 1934	H	Asia, N. Am.
takedana		22	„ „		Japan
ILYSANTHES $x=13$					
parviflora		26	Raghavan & S. '41	—	Ind., Tr. Af.
CELSIA $x=17, 20, 23, 24, 25, 26$					
pontica etc		34	Håkansson 1926	H	Armenia
PAULOWNIA					
tomentosa (*imperialis*)		—		H	Japan

VERONICA $x=7, 8, 9, 10, 21.$ $x_2=15, 17, 26$

$x=7$					
acinifolia		14	Hofelich 1935	—	Eur., A.Min.
agrestis		14, 28	Yamashita 1937	—	Eur., Asia, N. Africa
arvensis	Field Speedwell	14, 16	„ „	—	„ „
cardiocarpa (*biloba*)		14, 16	Hofelich 1935	—	Him., Cauc., Sib.
filiformis		14	Beatus 1936	—	A. Minor
polita (*didyma*)		14	„ „	—	Eur., Africa, Sib.
repens		14	Hofelich 1935	H	Corsica
serpyllifolia		14	„ „	—	N. Temp.
syriaca		14	„ „	—	A. Min., Syr.
triphyllos		14	„ „	—	Eur., N. Af., A. Minor
biloba		28	„ „	—	Him., Cauc., Sib.
opaca (*agrestis*)		28	Beatus 1936	—	Eur., Asia, N. Africa
persica (*tournefortii*)		28	„ „	—	O.W. Temp.
arguteserrata (*biloba*)		42	Hofelich 1935	—	Him., Cauc., Sib.
campylopoda		42	„ „	—	S.W. Asia
hederifolia		56	„ „	—	Eur., S.W. & N. Asia
$x=8$					
dillenii (*verna*)		16	Hofelich 1935	—	Eur., S.W. & N. Asia
fruticans		16	Huber 1927	—	Eur., Grnld.
as *fruticulosa*		16	Beatus 1936		
prostrata		16, 32	Scheerer 1937	—	Europe
verna		16	Hofelich 1935		Eur., S.W. & N. Asia
chamaedrys	Germander Sp.	32	Simonet 1934d	—	Eur., A.Min. Syria
orbiculata (*prostrata*)		32	Scheerer 1937	—	Europe
austriaca		32, 48	„ „	—	Eur., Cauc.
gentianoides		48	Huber 1927	H	S.E. Europe
teucrium		64	Simonet 1934d	H	Eur., C. As.
		68	Graze 1933		
variegata		64, 68	Simonet 1934d	H	*cult*
$x=9$					
alpina		18	S. & S. 1941	H	Alp., Arctic
anagalloides		18	Schlenker 1936	—	Gr.—Pers.
beccabunga	Brooklime	18	„ „	—	N. Temp.
crista-galli		18	Hofelich 1935	—	Caucasus
montana		18	Simonet 1934d	—	Europe
oxycarpa (*anagallis*)		18	Schlenker 1936	—	N. Temp.

VERONICA (*cont.*)					
panormitana (*cymbalaria*)		18, 36	Hofelich 1935,1936	—	Medit., A. Minor
praecox		18	,, ,,	—	Medit.
stelleri		18	Sakai 1935	—	Aleutians
americana		36	Schlenker 1936	—	N. America
anagallis (*aquatica*)	Water Sp.	36	,, ,,	—	N. Temp.
onoei		36	R. Yamazaki 1936	—	Japan
$x_2=15$ (7+8)					
sibthorpioides		30	Hofelich 1935	—	France
$x_2=17$ (8+9)					
grandis		34	Graze 1935	—	Eur. or Sib.
longifolia (*maritima*)		34, 68 70?	,, ,, S. & S. 1941	H	Eur., A. M., Sib.
pinnata		34	,, ,,	—	Siberia
schmidtiana		34	Sakai 1935	—	Sakhalin
bachofenii (*grandis*)		34	Graze 1933	—	Hungary
barrelieri (*spicata*)		34	,, ,,	H	Eur., N. As.
euxina		34	,, ,,	—	Bulgaria
foliosa (*spuria*)		34	,, ,,	H	Europe
komarovii		34	,, ,,	—	Kor., Manc.
officinalis	Common Sp.	34, 36	,, ,,	HM	N. Temp.
orchidea		34	,, ,,	—	Cauc., Dan.
spicata		34	,, ,,	H	Eur., N. As.
spuria		34	,, ,,	H	Europe
ticinensis (*longifolia*)		34	,, ,,	H	Eur., A. M., Sib.
virginica	Culvers Root	34	Huber 1927	HM	E: U.S.A.
crassifolia (*spicata*)		68	Graze 1933	H	Hungary
incana (*candida*)		68	,, ,,	H	S.E. Eur., N. Asia
$x_3=26$ (8+9+9)					
peregrina		52	Hofelich 1935	—	Eur., N. Am.
$x=20$					
bidwillii		40	Frankel & H. 1937	H	New Zeal.
$x=21$					
linifolia		42	Frankel & H 1937	H	New Zeal.
lyallii		42		H	,,
HEBE (VERONICA) $x=20, 21$					
$x=20$					
gaunteeltii		40	Simonet 1934d	H	New Zeal.
mathewsii		40	,, ,,	H	,,
parviflora		40	,, ,,	H	,,
pimeleoides		40	,, ,,	H	,,
salicifolia		40	,, ,,	H	,,
speciosa		40	,,	H	,,

HEBE (*cont.*)					
lycopodioides		40	Frankel & H. 1937	—	New Zeal.
vernicosa		40, 42	„ „	H	„
subalpina		80	„ „	—	„
pinguifolia		80	„ „	H	„
buxifolia		42, 80, 84	„ „	H	„
montana		120	„ „	—	„
traversii		120	„ „	H	„
x=21					
hulkeana		42	Simonet 1934d	H	New Zeal.
ciliolata		42	Frankel & H. 1937	—	„
tetrasticha		42	„ „	—	„
cupressoides		42	„ „	H	„
raoulii		42	„ „	—	„

(2) Parasitic Group

ALECTOROLOPHUS (RHINANTHUS) *x*=7					
minor etc.	Penny Grass	14	Witsch 1932	Par	Europe
major	Yellow Rattle	14+8ff	Fagerlind 1936	Par	„
PEDICULARIS *x*=8					
foliosa etc.		16	Witsch 1932	Par	Europe
amoena etc.		16	S. & S. 1938	Par	Altai
MELAMPYRUM *x*=9					
arvense etc.	Cow-wheat	18	Witsch 1932	Par	Eur., Cauc.
SOPUBIA *x*=9					
delphinifolia		36	K. Iyengar 1937	Par	India
ODONTITES *x*=10					
lutea etc.		20	Witsch 1932	Par	Eur., A. Min
TOZZIA *x*=10					
alpina		20	Witsch 1932	Par	Europe
EUPHRASIA *x*=11					
officinalis etc.	Eyebright	22	Witsch 1932	M Par.	N. Temp., Arct.
BARTSIA (BARTSCHIA) *x*=12					
alpina		24	Witsch 1932	Par	Eur., N. Am
CASTILLEJA $x_2=11+12$					
arctica		46	S. & S. 1941	Par	Arctic

253. OROBANCHACEAE

LATHRAEA *x*=?					
squamaria	Toothworth	36, 42	T. 1930, 1935	Par	Eur., N. As.
clandestina		42	Dangeard 1937	Par	S. Europe
OROBANCHE *x*=19					
coerulescens		38, 40	Sugiura 1936*b*	Par	Eur., N. As.
ammophilia		40	„ „	Par.	„ „
minor	Broomrape	38	Carter, T. 1931	Par	Eur., N. Afr
lucorum		38	Palmgren 1943	H Par	Scand.
PHACELLANTHUS *x*=19					
tubiflorus		38, 57, 76	M. & T. 1937	Par	Japan

254. LENTIBULARIACEAE

PINGUICULA *x*=?					
vulgaris	Butterwort	50	Rosenberg 1909	CH	Eur., Sib., N. America
UTRICULARIA					
vulgaris	Bladderwort	—		CH	Eur., N. As. & Amer.

256. GESNERIACEAE

SAINTPAULIA *x*=7					
ionantha	African Violet	28	Sugiura 1936b	H	Trop. Afr.
SINNINGA (GLOXINIA) *x*=7					
speciosa	Gloxinia	56	Sugiura 1936b	H	Brazil
CORYTHOLOMA (GESNERIA) *x*=7					
cardinalis		28	Sugiura 1936b	H	Trop. Amer.
NAEGELIA (GESNERIA) *x*=12					
zebrina		24	Sugiura 1936b	—	Brazil
STREPTOCARPUS *x*=15, 16					
(i) Stemmed Group					
caulescens		30	Lawrence *et al.* '39	—	Trop. E. Afr.
holstii		30	„ „	—	„ „
kirkii		30	„ „	—	„ „
orientalis		30	„ „	—	„ „
saxorum		30	„ „	—	„ „
(ii) Stemless Group					
comptonii		32	Lawrence *et al.* '39	—	S. Africa
cyaneus		32	„ „	—	„
denticulata		32	„ „	H	„
dunnii		32	„ „	H	„
galpinii		32	„ „	—	„
gardeni		32	„ „	—	„
gracilis		32	„ „	—	„
grandis		32	„ „	—	„
haygarthii		32	„ „	—	„
insignis		32	Lawrence unp.	—	„
luteus		32	Lawrence *et al.* '39	—	„
mahoni		32	„ „	—	„
michelmorei		32	„ „	—	„
parviflorus		32	„ „	H	„
polackii		32	Lawrence unp.	—	„
polyanthus		32	Lawrence *et al.* '39	H	„
rexii		32	„ „	H	„
wendlandii		32	„ „	—	„
woodii		32	„ „	—	„
kewensis × *grandis*		32, 64	Lawrence unp.	H	*cult*
veitchii		32	Sugiura 1940	H	„
RAMONDA *x*=18					
nathaliae		36	Glišič, T. 1927	H	Balkans
serbica		72	„ „	H	„

257. BIGNONIACEAE

TECOMA $x=9, 10, 17$					
capensis		34	Nakajima 1936	H	S. Africa
smithii	Austr. Trumpet-bush	36	Sugiura 1936b	H	*cult*
jasminoides		38	Nakajima 1936	H	Australia
stans	Yellow Elder	40	Bowden 1940a	H	N. & S. Am
tagliabuana		40	Vilmorin & S. 1927a	H	*cult*
INCARVILLEA $x=9, 11$					
delavayi		18	Sugiura 1936b	H	China
		22	Bowden 1940a	H	„
compacta		22	„ „	H	„
		18	Sugiura 1936b	H	„
grandiflora		22	Bowden 1940a	H	„
olsae		22	„ „	H	C. Asia
CAMPSIS (TECOMA) $x=9, 20$					
grandiflora		36	Sugiura 1936b	H	China
chinensis		40	Sax 1933b	H	China, Jap.
radicans	Trumpet Vine	40	„ „	H	E: U.S.A.
CATALPA $x=20$					
bignonioides (*syringaefolia*)	Indian Bean	40	Scheu, T. 1936	SW	N. America
KIGELIA $x=20$					
pinnata	Sausage Tree	40	Bowden 1940a	ShM.	Trop. & Afr
BIGNONIA (DOXANTHA, ANISOSTICHUS) $x=20$					
capreolata (*crucigera*)	Cross Vine	40	Bowden 1940a	H	N. Amer.
tweediana		80	„ „	—	Brazil
chica	Chica	—		D	S. Amer.
MILLINGTONIA $x=15?$					
hortensis	Indian Cork Tree	30	Narasinga Rao 1936	HW	Burma
CRESCENTIA					
cujete	Calabash T.	—		To	W. Indies, S. America
JACARANDA					
mimosaefolia	Jacaranda	—		HSh.	Brazil
OROXYLON					
indicum		—		DM	India
SPATHODEA					
campanulata	Scarlet Bell	—		HSh	Trop Afr.
TECOMELLA					
undulata	Parpuk	—		FoH Re	Arab.—Ind

258. PEDALIACEAE

PEDALIUM $x=8$					
murex	Burra Gokeru	16	Srinivasan 1942	M	Ind., Trop. Africa
SESAMUM $x=8, 13$					
orientale	Sesame	26	Sugiura 1936b	O	*cult*, India
(*indicum*)		(52)	Richharia & P. 1940		
prostratum		32	Ramanujam 1942		India
radiatum	Black Beniseed	64	John & Rao 1941	O	Trop. Africa
MARTYNIA $x=15, 18$					
fragrans		30	Sugiura 1936b	V	Mexico
louisiana	Unicorn Plant	30	Gaiser *et al.* 1943	HV	S: U.S.A.
annua (*diandra*)		36	Srinivasan 1942	V	Braz., Mex.

259. ACANTHACEAE

HYGROPHILA $x=(6)\ 12$					
spinosa	Nirmulli, Water Jasmine	24	Sugiura 1940	(M)	E. Ind., Mal.
JUSTICIA $x=(7)\ 14$					
debilis		28	Sugiura 1936a	—	Arabia
furcata		28	„ „	—	Mexico
RUELLIA $x=8, 9.$ $x_2=17$					
tuberosa	Menow-weed	34	Bowden 1940a	H(R)	Trop. N. Am., Jam.
		32	Sugiura 1936b		
ciliosa		34	Bowden 1940a	H	E: U.S.A.
malacosperma		34	„ „	H	C. America
nudiflora		34	„ „	H	S: U.S.A., Mexico
strepens		34	„ „	H	E: U.S.A.
amoena		36	Sugiura 1937b	H	S. America
ciliata		36	„ 1936b		India, Bur.
dipteracanthus		36	„ 1937b		Mexico
THUNBERGIA $x=7, 9$					
alata	Black-eyed Susan	18	Sugiura 1936b	H	Trop. Africa E. Ind.
grandiflora		*c.* 28	E.K.J.	H	India, Bur.
laurifolia		56	Sugiura 1936b	H	Malaya
ACANTHUS $x=14$					
mollis (*lusitanicus*)		56	Sugiura 1936b	H	S. Europe
spinosus		80	Drahowzal 1936	H	„
		112	Sugiura 1937b		
montanus		—		H	W. Africa
ADHATODA					
vasica		—		HDIM	Ind., Mal.
STROBILANTHES					
flaccidifolius		—		D	Assam—China

260. GLOBULARIACEAE

GLOBULARIA $x=10$					
cordifolia	Globe Daisy	20	Sugiura 1937a	H	S. Europe

262. SELAGINACEAE

HEBENSTREITIA $x=7$					
comosa		14	Sugiura 1936b	H	S. Africa
dentata		14	” ”	—	”

263. VERBENACEAE

VERBENA $x=5, 7$					
$x=5$					
chamaedrifolia (*peruviana*)		10	Beale 1940	—	Trop. Amer.
erinoides		10	Junell 1934	—	Peru
grandiflora		10	Dermen 1936a	—	Cuba
hybrida	Garden V.	10	Beale 1940	H	*cult*
		20 (40)	Furusato 1940	—	
radicans		10	Beale 1940	—	Chile
teucrioides (*platensis*)		10	Noack 1937	—	S. America
ambrosifolia		30	Dermen 1936a	—	N. America
aubletia	Clump V.	30	Noack 1937	—	S.W: U.S.A
as *canadensis*		30	Junell 1934	—	N. America
tenera	Italian V.	30	Beale 1940	H	S. Brazil
racemosa		30	Dermen 1936a	—	N. America
$x=7$					
angustifolia		14	Dermen 1936a	—	N. America
bracteata		14	” ”	—	C.&S.U.S.A
halei		14	” ”	—	N. America
hastata		14	” ”	—	”
hispida		14	” ”	—	S. America
neomexicana		14	” ”	—	New Mexic
officinalis	Vervain	14	” ”	H	Temp.
prostrata		14	” ”	—	N. America
simplex (*angustifolia*)		14	” ”	—	”
stricta		14	” ”	—	”
urticifolia		14	” ”	—	Temp. & Tr. Amer.
bonariensis		28	” ”	H	S. America
litoralis		28	” ”	—	Trop. Ame
rigida		42	” ”	H	Braz., Arg.
as *venosa*		42	Noack 1937	H	Argentine
corymbosa		56	” ”	H	Chile
ovata		72	” ”	—	Brazil
PRIVA $x=6$					
lapulacea		12	Patermann, T. 1938	—	Trop. Ame

VITEX *x*=6, 8					
agnus castus	Chaste Tree	24	Patermann, T. 1938	H	Med., S.W. Asia
trifolia		32	Sugiura 1936a	M	Tr. As., Aus.
negundo		—		M	Tr. & Sub. Asia
PHRYMA *x*=7					
leptostachya		14	Sugiura 1936b	—	N. As., Him.
		28	D. C. Cooper 1941		N. America
CALLICARPA *x*=?					
japonica		16	Sugiura 1936b	H	Japan
		18	Pattermann *l.c.*		
CLERODENDRON *x*=12, 23					
fargesii		24	Patermann, T. 1938	H	China
trichotomum		46, 92	Bowden 1940a	H	Japan
LIPPIA (ALOYSIA) *x*=?					
juncea (*baillonia*)		32	Junell 1934	—	Chile
nodiflora		36	„ „	M	O.W. Trop.
adoensis	Bush Tea	—		(B)	Abyssinia
pseudo-thea	Capitaõ do Matto	—		B	Brazil
citriodora	Lemon Verbena	—		H	Arg., Chile
DURANTA *x*=?					
plumieri (*repens*)	Pigeon Berry	36	Patermann, T. 1938	H	Trop. Amer.
LANTANA *x*=?					
trifolia		48	Patermann, T. 1938	H	Trop. Amer.
camara		—		H	„
STACHYTARPHETA *x*=?					
cayennensis		48	Patermann, T. 1938	—	Trop. Amer.
angustifolia		56	Junell 1934	—	Guiana
dichotoma		*c.* 112	„ „	—	Trop. Amer.
indica	Brazilian Tea	—		(B)	Tropics
AVICENNIA					
nitida	White Mangrove	—		DW	Tr. Amer. & Africa
PETREA					
volubis		—		H	W. Indies
TECTONA					
grandis	Teak	—		MW	India—Siam

264. LABIATAE

TEUCRIUM *x*=5, 8					
botrys		10	Junell 1934	—	Europe
arduinii		32	„ „	—	S. Europe
flavum		32	„ „	—	Medit.
STACHYS (BETONICA) *x*=5, 8					
arvensis	Woundwort	10	Lang 1940	N	Temp.
sylvatica	Clownwort	48	L. & L. 1942a	M	Him., N. As.
		66	Lang 1940		

STACHYS (*cont.*)					
palustris	Marsh Betony	*c.* 64 102	Wulff 1938 Lang 1940	M	Temp.
affinis	Knot-root	—		R	Egy., Arabia
sieboldi	Chinese Artichoke	—		R	Jap., China
ROSMARINUS $x=6$					
officinalis	Rosemary	24	Scheel, T. 1931	Sp	Medit.
THYMUS $x=6$					
serpyllum	Mother of T.	24	L. & L. 1942a	Sp	Eur., Asia, N. Africa
vulgaris	Thyme	—		MSp	S. Eur., N. Asia
COLEUS $x=6, 8$					
blumei		24	Furusato 1940	H	Java
aromaticus		32	Scheel, T. 1931	M	India
rehneltianus		*c.* 48	,, ,,		—
rotundifolius	Madagascar Potato	—		R	Trop. S. Afr.
parviflorus	Koorka	—		R	India
MONARDA $x=6, 8$					
punctata	Am. Horse Mint	24	Bushnell 1936	M	N. America
didyma (*coccinea*)	Bee Balm	32	,, ,,	H	E: N. Amer.
fistulosa	Am. Bergamot	32	,, ,,	H	W:N. Amer.
LAVANDULA $x=6, 9.$ $x_2=15$					
multifida		24	Scheel, T. 1931	HP	W. Medit.
pedunculata		30	Garcia 1942	H	Atl. Is.
stoechas		30	,, ,,	H	Medit.
viridis		30	,, ,,	—	Port., Madeira
spica	Spike L.	36	Laws 1930	HP	Medit.
vera v. *nana*	Lavender	48	E.K.J.	HP	,,
officinalis	,,	54	Garcia 1942	HP	,,
lanata		54	,, ,,	—	Spain
latifolia		54	,, ,,	HP	Medit.
MENTHA $x=6, 10$					
arvensis	Field Mint	12, 60, 72	Junell, L. & L. 1942	SpP	Eur., N. As.
		54	Wolf 1929		
		72	Ruttle 1931a		
		64, 92	Nagao 1941		
requieni		18	Ruttle 1931a	P	Cors., Sard.
longifolia (*silvestris*)	Horse M., Jap. Peppermint	18	Heimans 1938	Sp	N. Temp.
		24	Ruttle 1931a		
		48	Nagao 1941		
rotundifolia	Apple Mint	18	Heimans 1938	P	Eur., Asia, N. Africa
		24	Nagao 1941		
		54	Schürhoff 1929b		

MENTHA (*cont.*)					
niliaca	Egyptian M.	24, 56	Ruttle 1931a	P	Egypt
spicata	Spear Mint	36	Schürhoff 1929b	P	North O.W.
		36, 48	Junell, L. & L. 1942		
as *viridis*	White S. M.	36	Nagao 1941		
	Ital. Black S. M.	48	„ „		
	Am. Black S. M.	84	„ „		
aquatica	Water Mint	36	Schürhoff 1929b	P	Eur., Asia, N. Africa
		c. 96	Ruttle 1931a		
		36	Schürhoff 1929b		
piperita	Peppermint	36, 64	Glotov 1940	PSp	Eur., Asia, N. Africa
		66, 68, 70	Ruttle 1931a		
v. *officinalis*	White P.	72, 84	Nagao 1941	P	
v. *vulgaris*	Black P.	68, 72	„ „	P	
		(128)	Glotov 1940		
pulegium	Pennyroyal	20, 40	Ruttle 1931a	MSp	North O.W.
citrata	Bergamot M.	—		H	Eur.
SALVIA $x=6, 11, 15, 17, 19$					
$x=6, 7$					
hispanica		12	Scheel 1931	—	Trop. Amer.
dumetorum		14	Sugiura 1937a	—	N. Eur., N. Asia
nemorosa	Violet S.	14	Benoist 1937	—	Europe
officinalis	Sage	14	Hruby 1935	Sp	Medit.
$x=8$					
glutinosa		16	Hruby 1935	—	S. Eur.—Him.
grandiflora		16	„ „	—	A. Minor
columbaria	Chia	32	Carlson & S. 1936	G	W:N. Amer.
splendens (i)	Scarlet S.	32	„ „ „	H	Brazil
virgata		32	Benoist 1937	—	S.E. Eur., S.W. Asia
$x=9$					
austriaca		18	Benoist 1937	—	S.E. Eur.
patens	Gentian S.	18	Suguira 1937a	—	Mexico
verbenacea		54	Benoist 1937	—	Eur., S.W. Asia
pratensis	Meadow S.	18	„ „	H	Eur., Cauc.
v. *tenorii*		20	Sugiura 1936b		
$x=10$					
coccinea		20	Sugiura 1936b	H	Trop. N.Am.
farinacea		20	„ „	H	Texas, Mexico
splendens (ii)		20	Furusato 1940	H	Brazil

SALVIA (*cont.*)					
$x=11$					
argentea		22	Sugiura 1936b	—	Medit.
nutans		22	Benoist 1937	—	S.E. Europe
$x_2=(7+8)$					
mellifera		30	Carlson & S. 1936	—	California
(*Audibertia stachyoides*)					
opiana		30	,, ,, ,,	—	—
$x_2=(8+9)$					
valentina		34	Benoist 1937	—	Spain
$x_2=(9+10)$					
algeriensis		38	Benoist 1937	—	N. Africa
barrelieri (*pratensis*)		38	,, ,,	—	Eur., Cauc.
GALEOPSIS $x=8$					
pubescens		16	Müntzing 1932	—	Europe
speciosa etc.		16	,, ,,	—	,,
tetrahit	Hemp Nettle	32	,, ,,	—	,,
PRUNELLA (BRUNELLA) $x=8$					
vulgaris etc.	Self Heal	32	Hruby 1932	H	Temp.
SCUTELLARIA $x=8$					
albida etc.		32	Scheel 1930	—	S. E. Europe
BETONICA $x=8$					
officinalis	Wood Betony	16	Lang 1940	M	Eur., A. Minor
grandiflora		32	Lewitsky, T. 1936		A. Minor, Persia
ORIGANUM $x=8$					
vulgare	Pot Marjoram	32	Scheerer, L. & L. 1942	Sp	Eur., Asia, N. Africa
OCIMUM $x=8$					
gratissimum		64	Golubinski, T. 1938	HP	India
sanctum	Tulsi	64	,, 1936	HM	O.W. Trop.
canum		64, 128	,, 1937	P	Trop. Asia & Africa
canum × *grat.*		64 (128)	Lapin 1939	—	*expt.*
basilicum	Basil	—		HMSp	Afghanistan
LAMIUM $x=9$					
album	Archangel	18	Turesson 1938	M	Europe
maculatum		18	Jørgensen 1927	H	Europe
other species	Dead Nettle	18, 36	L. & L. 1942		—
NEPETA $x=9$					
macrantha		18	S. & S. 1938	H	Siberia
mussini		18	Sugiura 1936a	—	Cauc., Pers.
hederacea	Ground Ivy	18	,, 1940	M	Europe
		36	Rutland 1941		
cataria	Catmint	36	Sugiura 1940	HM	Eur.—Him.

MOSLA $x=9$					
punctata		18	Sugiura 1936b	—	Japan
DRACOCEPHALUM $x=5, 7$					
imberbe		10	S. & S. 1938	H	Altai
moldavica		20	Panutina-M. 1933	H	Eur., N. As.
altaiense		14	S. & S. 1938	H	Altai
LYCOPUS $x=11$					
americanus etc.		22	Ruttle 1932	—	N. America
PHLOMIS $x=12$					
alpina		24	S. & S. 1938	H	Siberia
HYSSOPUS $x=6$					
officinalis	Hyssop	12	E.K.J.	DSp	Eur., T. As.
LEUCAS					
aspera	Thumba	—		IM	India
POGOSTEMON					
cablin	Patchouli	—		P	India
heyneanus	Java P.	—		P	Mal., Java
SATUREIA					
hortensis	Summer Savory	—		Sp	Medit., S.W. Asia
montana	Winter Savory	—		Sp	S. Eur., Cau.

III MONOCOTYLEDONS

265. BUTOMACEAE

HYDROCLEIS $x=6$					
commersonii (*nymphoides*)	Water Poppy	12	Suessenguth 1920	H	Brazil
BUTOMUS $x=?$					
umbellatus	Flowering Rush	26 28, 40	Whitaker 1934a Lohammar 1931	H	Eur. & Tem. Asia

266. HYDROCHARITACEAE

ENHALUS $x=7$					
acoroides (*koenigii*)	Sea Fruit	14	E.K.J.	T(V)	N. Mal., Austr.
LAGAROSIPHON $x=7$					
vaginalis		14	E.K.J.	Ma	E. Af., Ind.
HYDROCHARIS $x=7$					
morsus-ranae	Frog's Bit	28	Tuschnjakowa 1929	H	Eur., Temp. Asia
HYDRILLA $x=8$					
verticillata		16, 24	Sinoto 1929	FoMa	W. Indies
ELODEA (HELODEA, ANACHARIS) $x=8$					
callitrichoides		16	Heitz 1927	H	S. America
canadensis	Ditch Moss	24 48	Heppell unp. Santos 1924	H	N. America
densa		48	M. & S. 1935	H	Argentine
VALLISNERIA $x=10$					
spiralis		20	Jørgensen 1927b	H	Cosmop.
gigantea		40	” ”	H	E. Indies
OTTELIA $x=10?$					
alismoides		*c.* 40	E.K.J.	M(V)	Trop. As. & Australia
STRATIOTES $x=12$					
aloides	Water Soldier	24	Schürhoff 1926	H	Europe

267. ALISMATACEAE

ALISMA $x=5$					
plantago-aquatica		10	Wulff 1939a	H	N. Temp.
	Water Plantain	12	Palmgren 1943		
		14	Heppel, M. 1939		

ECHINODORUS $x=7$					
ranunculoides		14	Palmgren 1943	—	N. Europe
SAGITTARIA $x=10, 11$					
montevidensis	Giant Alisma	20	Taylor 1925b	H	S. America
sagittifolia		20	Nawa 1928	H	N. Temp.
		22	L. & L. 1942	—	
trifolia		22	Morinaga & F. '31	—	China, Jap.
aginashi		22	Shinke 1929	—	Japan
natans		22	Vaarama 1941	—	N. Eur., Sib.
latifolia		22	Oleson 1941	—	N. America
rigida		22	„ „	—	„
LIMNOPHYTON $x=12$					
obtusifolium		24	Murthy 1933	—	Tr. Asia & Africa

270. TRIURIDACEAE

SCIAPHYLLA $x=12$?					
japonica		48	Ohga & S. 1932	—	Japan

274. APONOGETONACEAE

APONOGETON					
distachyon	Cape Asparagus	—		V	S. Africa
fenestrale	Water Yam	—		V	Madagascar

275. ZOSTERACEAE

ZOSTERA $x=6$					
marina	Eelgrass	12	Wulff 1937a	Ma(Su)	Europe
nana		12	„ „		N. Temp.

276. POTAMOGETONACEAE

POTAMOGETON $x=?$					
perfoliatus		*c.* 48	Wisniewska 1931	—	N.&S.Temp.
fluitans		52	Kuleszanka (T. 1935)	—	Temp. & Trop.
crispus		52	Scheerer 1939	H	E. N. Amer.

277. RUPPIACEAE

RUPPIA $x=8$					
maritima		16	Wulff 1937a	—	Temp. Sub. Trop.

278. ZANNICHELLIACEAE

ZANNICHELLIA $x=7$					
palustris		28	Scheerer 1940	—	Cosmop.

279. NAIADACEAE

NAIAS *x*=6				
marina (major)	12	Lewitzky 1931a	Fo	Temp. & Trop.

280. COMMELINACEAE

POLLIA *x*=5				
subumbellata	10	Darlington 1937b	—	Himalayas
RHOEO *x*=6				
discolor	12	Darlington 1929a	H	C. America
ZEBRINA *x*=6				
pendula	24	Darlington 1929a	H	Mexico
TRELEASIA (SETCREASIA) *x*=6				
brevifolia	24, 36	Anderson & S. 1936	—	Mexico
SPIRONEMA *x*=6				
fragrans	12	Darlington 1929a	H	Mexico
CALLISIA *x*=6				
repens	12	Anderson & S. 1936	—	S. America
CUTHBERTIA *x*=6				
graminea	12, 24, 25, 36, 37	Giles 1942	—	S.E. U.S.A
TRADESCANTIA *x*=6, 8, 12, 13, 15, 18				
x=6 (*virginiana* group)				
bracteata	12, 18	Anderson & S. 1936	—	U.S.A.
canaliculata	12, 24	” ”	—	”
edwardsiana	12	” ”	—	”
ernestiana	12	” ”	—	”
hirsuticaulis	12	” ”	—	”
hirsutiflora	24	” ”	—	”
humilis	12	” ”	—	”
gigantea	12	” ”	—	”
longipes	24	” ”	—	”
occidentalis	12, 24	” ”	—	”
ozarkana	24	” ”	—	”
paludosa	12+0-12f	” ”	—	”
roseolens	24	” ”	—	”
subaspera	24	” ”	—	”
tharpii	24	” ”	—	”
virginiana	24	” ”	—	”
virginiana etc. Spiderwort	24+0-6f.	Darlington 1929a	H	*cult*
x=6, 8, 12 etc.				
crassifolia	12+0-2f	Darlington 1929a	H	S. Americ
disgregea	16	” 1937b	—	Mexico

TRADESCANTIA *(cont.)*					
rosea		24	Anderson & S. 1936	—	U.S.A.
micrantha		26	,, ,,	—	Mexico
geniculata		32	,, ,,	—	S. America
navicularis		32	,, ,,	—	Peru
fluminensis	Wandering Jew	60	,, ,,	H	S. America
as *albiflora*		72	,, ,,	—	Brazil
CAMPELIA *x*=8					
zanonia		16	Darlington 1937b	—	S. America
COMMELINANTIA *x*=13					
anomala		26	Anderson & S. 1936	H	Mexico
CYANOTIS *x*=14					
somaliensis		28	Anderson & S. 1936	H	E. Africa
COLEOTRYPE *x*=18					
natalensis		36	Anderson & S. 1936	H	S. Africa
DICHORISANDRA *x*=19					
thyrsiflora		38	Anderson & S. 1936	H	Brazil
ANEILEMA *x*=20					
spiratum		40	Murthy 1934	FoV	India
nudiflorum	Bird's foot Grass	—		FoV	S.E. Asia
COMMELINA *x*=?					
hirtella		*c.* 58	Bowden 1940a	—	E. U.S.A.
nudiflora		56	Anderson & S. 1936	FoV	Tropics
bengalensis		48-68(f?)	,, ,,	(Fo)V	O.W. Trop.
coelestis		90	,, ,,	—	Mexico
TINANTIA *x*=?					
fugax		68	Darlington 1929a	—	Trop. Amer.
		64	Anderson & S. 1936		
PALISOTA *x*=?					
bracteosa		80	Anderson & S. 1936	H	Trop. Afr.

285. ERIOCAULACEAE

ERIOCAULON *x*=8, 9				
cinereum	32	Erlandsson 1942a	—	Australia
truncatum	32	,, ,,	—	India
sexangulare	36	,, ,,	—	Ind., Madag.

286. BROMELIACEAE

TILLANDSIA $x=8$					
usneoides	Old Man's Beard	32	Billings 1904	HT	Trop. Amer
lindeniana		64	Lindschau 1933	T	Brazil
streptophylla		64	„ „	HT	Mexico
juncea		c. 96	„ „	T	Trop. Amer
BROMELIA $x=8$					
fastuosa		c. 96	Lindschau 1933	HT	Trop. Amer
pinguin	Wild Pineapple	96	Collins & K. 1931	HT	„
CRYPTANTHUS $x=9, 17$					
acaulis		34	M. & S. 1935	H	Brazil
		36	Lindschau 1933		
bivittans		36, 54	„ „	H	S. America
beuckeri		54	„ „	H	Brazil
AREGELIA $x=(9), 27$					
marmorata etc.		54	Lindschau 1933	H	Brazil
microps		c. 126	„ „	H	—
BILLBERGIA $x=(9), 27$					
liboniana		54	M. & S. 1935	H	Brazil
ligulata		54	Lindschau 1933	H	S. America
vittata		72	„ „	H	Brazil
sp.		108	M. & S. 1935		—
zebrina		—		H	Brazil
NIDULARIUM $x=(9), 27$					
princeps etc.		54	Lindschau 1933	H	Brazil
AECHMEA $x=25, 27$					
comata etc.		50	Lindschau 1933	H	Trop. Ame
hystrix		54	„ „	H	Brazil
CARAGUATA $x=28$					
zahnii	Caraguata	56	Lindschau 1933	T	Trop. Ame
ACANTHOSTACHYS $x=25$					
strobilacea		50	Lindschau 1933	—	Brazil
CANISTRUM $x=25$					
roseum		50	Lindschau 1933	H	Brazil
MACROCHORDIUM $x=25$					
tinctorium		50	Lindschau 1933	—	Brazil
DYCKIA $x=25$					
altissima		50	Lindschau 1933	H	Brazil
sulphurea		50	„ „	H	„
PUYA $x=25$					
spathacea		50	Lindschau 1933	H	Argentine
HECHTIA $x=25$					
ghiesbreghtii		50	Lindschau 1933	H	Mexico

PITCAIRNIA $x=25$					
andreana		50	Lindschau 1933	H	Equador-Venez.
muscosa		50	M. & S. 1935		Brazil
punicea		50	Lindschau 1933	H	Mexico
magdalena	Pitafloja	—		T	Trop. Amer.
ANANAS $x=25$					
microstachys		50	Collins 1933	FTVit	Brazil
comosus (*sativus*)	Pineapple	50, 75, 100	Collins & K. 1935	FTVit	*cult*, Brazil
PSEUDANANAS (ANANAS) $x=25$					
macrodontes		*c.* 100	Lindschau 1933	—	Brazil
LINDMANNIA $x=25$?					
penduliflora		100	Lindschau 1933	—	Peru
GREIGIA					
sphacelata	Chupon	—		F	Chile

287. MUSACEAE

MUSA $x=9, 10, 11$					
$x=9$					
buchananii		18	E.K.J.	—	Zambesi
davyae		18	Dodds unp.	—	Transvaal
ensete	Abyssinian B.	18	Cheesman & L. 1935	H	Abyssinia
livingstoniana		18	E.K.J.	—	Trop. Africa
pechelli		18	,,	—	New Guinea
gilletii		18	Dodds unp.	—	Trop. Africa
superba		18	Agharkar & B. 1935	—	E. Indies
$x=10$					
borneensis		20	Cheesman unp.	—	Borneo
coccinea		20	Cheesman & L. 1935	TH	China
glauca		20	White 1928	—	Burma
textilis	Manila Hemp	20	Cheesman & L. 1935	T	Mal., Phil.
violascens		20	Cheesman unp.	T	Malaya
$x=11$					
acuminata (*moluccensis*)		22	Cheesman & L. 1935	—	Amboyna
balbisiana (*textilis*)		22	Graner 1934	—	Trop. Asia
banksii		22	Dodds unp.	—	Australia
discolor		22	Cheesman & L. 1934	—	?
basjoo	Bashōfu	22	Morinaga *et al.* 1929	HT	Japan
as *zebrina*		22	d'Agremand 1926		

MUSA (*cont.*)					
martinii		22	Cheesman & L. 1935	—	Tongking
ornata		22	,, ,,	—	Ind., S.W. Asia
rhodochlamys		22	Cheesman & L. 1935	—	*cult*, Mal.
rosacea		22	,, ,,	—	Trop. Asia
as *rubra*		22	Agharkar & B. 1935	—	
velutina		22	Thomas unp.	T	Himalayas
sapientum (*paradisiaca*)	Banana, Plantain	22, 33	Cheesman & L. 1935	FTV	*cult*, Mal.
		22, 32–35	Agharkar & B. 1935		
		44, 55, 77, 88	Dodds 1942, 1943 & unp.		
cavendishii	Dwarf B.	33	Cheesman & L. 1935	F	China

288. STRELITZIACEAE

STRELITZIA, $x=7, 11$					
reginae		14	Cheesman & L. 1935	H	S. Africa
augusta		22	,, ,,	H	,,
HELICONIA $x=8, 11, 12$					
metallica		16, 18, 20, 22	Agharkar & B. 1935	H	Ecuad.—Colombia
seemannii		22	Cheesman & L. 1935	H	India
bihai	False Plantain	24	,, ,,	HV	W. Ind., Tr. S. Am
brevispatha		24	,, ,,	—	Mexico
insignis		24	,, ,,	H	S. America
psittacorum	Parrot P.	24	,, ,,	H	,,
RAVENALA $x=11$					
madagascariensis	Travellers' Tree	22	Cheesman & L. 1935	H	Madagascar
guyanensis		—		—	Guiana

290. ZINGIBERACEAE

COSTUS $x=8, 9$					
cylindricus		16	Boehm 1931	T	Trinidad
		18	Gregory 1936		
discolor		18	Raghavan & V. 1943	H	Brazil
igneus		18	,, ,,	H	,,
malarotiensis		18	Gregory 1936	HT	Trinidad
speciosus		36	Raghavan & V. 1943	H	India, Mal.
afer	Ginger Lily	—		HSp	Trop. Afric

ZINGIBER $x=11, 12$					
cassumunar		22	Raghavan & V. 1943	M	Trop. Asia
zerumbet	Wild Ginger	22	„ „	V	„ „
mioga	Jap. Wild G.	55	Morinaga *et al.* 1929	Sp	Japan
officinale	Ginger	22	„ „ Raghavan & V. 1943	Sp	Malaya, *cult*
		24	Takahashi, K. 1931		
		22+2f	E.K.J.		
amaricans		—		MSp	Malaya
aromaticum		—		M	Java
gracile	Langkvas	—		Sp	Malaya
PHAEOMERIA (NICOLAJA) $x=12$					
atropurpurea		48	Boehm 1931	H	Malaya
KAEMPFERIA $x=12$					
gibsoni		24	Raghavan & V. 1943	—	—
gilbertii		36	„ „	H	India, Bur.
galanga		—		MSp	India
ALPINIA $x=12$					
allughas	Tara	48	Raghavan & V. 1943	M	India
calcarata		48	„ „	M	Ind., China
galanga	Siamese G.	48	„ „	Sp	Trop. Asia
nutans		48	„ „	H	India
vittata (rafflesiana)		48	„ „	H	Malaya
ELETTERIA $x=12$					
cardamomum	Malabar Cardamoms	48	Gregory 1936	MSp	S. Ind., Bur.
GLOBBA $x=12$					
bulbifera		48	Raghavan & V. 1943	—	Malaya
CURCUMA $x=21$					
amada	Mango G.	42	Raghavan & V. 1943	SpV	India
aromatica	Yellow Zedoary	42	„ „	MSp	„
longa	Turmeric	62	„ „	DSp	Malaya, *cult*
(domestica)		64	Sugiura 1931		
angustifolia	E. Ind. Arrowroot	—		R	Ind., Ceyl. Malaya
zedoaria	Zedoary	—		MP	Himalayas
HEDYCHIUM $x=9, 17, 26$					
flavescens (spicatum)		34	Raghavan & V. 1943	H	Himalayas
greenii		36	„ „	H	„

HEDYCHIUM (*cont.*)					
flavum		52	Raghavan & V. 1943	H	Himalayas
coronarium	Ginger Lily	54	,, ,,	H	India, China
gardnerianum		54	,, ,,	H	Himalayas
elwesii		66	Gregory 1936	HP	Assam
gracile		66	Raghavan & V. 1943	HSp	India
AFRAMOMUM					
angustifolium	Cameroon Cardamon	—		MSp	Cameroon
granum-paradisi	Grains of Paradise	—		MSp	Trop. Africa
melegueta	Alligator Pepper	—		MSp	Trop. W. Af.
AMOMUM					
aculeatum		—		Sp	Malaya
cardamum	Cardamoms	—		Sp	E. Ind., Mal.
dealbatum	Java C.	—		Sp	E. Indies
villosum		—		Sp	E. Ind., China
xanthioides	Bastard C.	—		Sp	Burma

291. CANNACEAE

CANNA *x*=9					
discolor		18	Offerijns 1935	H	Tr. W. Ind.
edulis	Queensland A.	18	Belling, T. 1931	HR	Trop. Amer.
glauca	Arrowroot C.	18	Honing 1928	HR	W. Ind., Mexico
flaccida		18	Belling, T. 1931	H	N. America
humilis		18	Offerijns 1935	H	China
indica	Indian Shot	18	Honing 1928	HR	Trop. Amer.
		27	Belling 1925		
aureo-vittata		18, 36	Honing 1928	H	Brazil

292. MARANTACEAE

THALIA *x*=6					
dealbata		12	Suessenguth 1921	HT	W. Africa
MARANTA *x*=6					
sanguinea		24	Suessenguth 1920	HR	E. Ind.
arundinacea	W. Indian Arrowroot	48	E.K.J.	HR	Trop. Amer. W. Indies
CALATHEA					
alluya	Topec Tamboo	—		R	Trop. Amer
MARANTOCHLOA					
flexuosa		—		T	W. Africa

293. LILIACEAE

Order of the Tribes with their Basic Numbers

I Scilleae : 4-15
II Allieae : 5-9
III Tulipeae : 6-12
IV Kniphofieae : 6
V Aloineae : 7
VI Asphodeleae : 7, 8 13
VII Uvularieae : 7, 11
VIII Polygonateae : 7, 8, 9, 10
IX Dianelleae : 8
X Veratreae : 8, 10, 11
XI Asparageae : 10
XII Anguillareae : 11, 20
XIII Hemerocallideae : 11, 30
XIV Colchiceae : 11, 18-22, 27
XV Tricyrtideae : 13
XVI Narthecieae : 13, 14, 15, 17
XVII Agapantheae : 15
XVIII Helonideae : 17
XIX Ophiopogoneae : 18
XX Aspidistreae : 18
XXI Convallarieae : 19

TRIBE I : SCILLEAE

BELLEVALIA (HYACINTHUS) $x=4$					
(i) *desertorum*		8	Feinbrun 1939	—	Palestine
flexuosa		8	,, ,,	—	,,
romana		8	,, ,,	H	It., Greece
sessiflora		8	,, ,,	—	Lybia, Egy.
(ii) *ciliata*		8	,, ,,	—	Alg.—Gr.
longipes		8	,, ,,	—	Assyria
speciosa		8	,, ,,	—	Transcauc.
wilhelmsii		8	,, ,,	—	Caucasus
palmyrensis		16	,, ,,	—	Syria
stepporum		16	,, ,,	—	,,
(iii) *fomini*		8	,, ,,	—	E. Caucasus
macrobotrys		8	,, ,,	—	,,
trifoliata		8	,, ,,	—	N.E. Medit.
webbiana		8	,, ,,	—	Tuscany
warburgii		16	,, ,,	—	Palestine
alexandrina		24	,, ,,	—	Alexandria
(iv) *formiculata*		8	Delaunay 1926	—	—
acutifolia		8	,, ,,	—	—
DIPCADI $x=4, 9$					
serotinum		8	Levan 1943	H	S. Eur., N. Africa
glaucum		18	La Cour unp.	H	S. Africa
PUSCHKINIA $x=5$					
scilloides		10	Greeves, T. 1930	H	A. Min., Syr.
v. *libanotica*		13	,, ,,	H	,, ,,
		10+4f	Darlington 1936b		
URGINEA $x=5$					
maritima (*scilla*)	Sea Onion	10+2f?	Geitler 1929ab	HM	Africa, Syria
		20+1-4f, 30	Raghavan & V. 1940		
		40	M. Sato 1934		

URGINEA (*cont.*)					
polyphylla		20	Raghavan & V. 1940	M	India
ORNITHOGALUM $x=5, 6, 7, 8, 9$					
libanoticum		10	Geitler 1929b	—	Syria
fimbriatum		12	Delaunay 1926	—	Gr., A. Min
narbonense		14	Geitler 1929b	—	Med., S.W. Asia
pyrenaicum		16	Greeves, T. 1931	V	S. Eur., S.W. Asia
pyramidale (*comosum*)		24	Nakajima 1936	—	E. Europe
tempskyanum		18	Delaunay 1926	—	Asia Minor
umbellatum	Star of Bethlehem	27 54	Nakajima 1936 M. & S. 1935	—	N. Africa
nutans		30	Nakajima 1936	H	Eur., A. Min
lacteum (as *ractium*)		32	,, ,,		S. Africa
arabicum		50	,, ,,	H	Medit.
caudatum		54	,, ,,	H	S. Africa
SCILLA $x=6, 7, 8, 9, 10, 11$					
sibirica		12	Sato 1935a	H	E. Eur., A. Minor
permixta		14+0-2f	,, 1936	H	—
pratensis		28	Maude 1940	H	Croatia
autumnalis		28, *c.* 42	M. 1939, 1940	H	Med., Cauc
campanulata (*hispanica*)		16	Sato 1935a	H	Spain
italica		16	Dark 1934	H	S. Europe
non-scripta (*nutans*)	Bluebell	16	Sato 1935a	H	Europe
peruviana	Cuban Lily	16	,, ,,	H	Medit. (*sic*)
as *ughii*		17, 19, 20, 22	,, 1936	H	
bifolia		18	,, 1935a	H	Eur., Asia
hyacinthoides		20	,, ,,	H	S. Europe
verna		22	Maude 1940	H	W. Europe
japonica		26, 34, 36, 42, 44	Sato 1935a	H	Japan
chinensis		34	,, ,,	H	China
indica		44, 46	Raghavan & V. 1939b	M	Trop. Asia
CHIONODOXA $x=9$					
sardensis		18	Greeves, T. 1930	H	Asia Minor
luciliae		18	Müller 1912	H	,,
LACHENALIA $x=7, 8, 11, 13$					
(i) *rubida*		14	Moffett 1936	H	S. Africa
membranacea		14	,, ,,	H	,,
tricolor		14, 21	,, ,,	H	,,
glaucina		28	,, ,,	H	,,
pendula		42	,, ,,	H	,,

LACHENALIA (*cont.*)					
(ii) *rosea* (*isopetala*)		14	Moffett 1936	H	S. Africa
elegans		28	„ „	H	„
(iii) *liliiflora*		16	„ „	H	„
nervosa		16	„ „	H	„
orchioides (*pustulata*)		16, 17	„ „	H	„
pallida		16	„ „	H	„
purpureo-coerulea		16	„ „	H	„
unicolor fragrans (*versicolor*)		16	„ „	H	„
(iv) *unifolia*		22, 26	„ „	H	„
HYACINTHUS $x=8, 14$					
orientalis	Hyacinth	16, 19-30	Darlington 1926	H	Gr., A. Min.
amethystinus		28	„ 1932b	H	Spain
GALTONIA $x=8$					
candicans	Summer H.	16	Newton 1924	H	S. Africa
MUSCARI $x=9$					
argaei		18	Delaunay 1926	—	Greece
armeniacum		18	Greeves, T. 1931	H	Asia Minor
caucasicum		18	Delaunay 1926	—	Caucasus
comosum (*monstrosum*)	Feather H.	18	„ „	H	Med., S.W. Asia
latifolium		18+0-2f	„ „	H	Asia Minor
longipes		18	„ „	—	Palestine
moschatum	Musk H.	18	„ „	H	Asia Minor
polyanthum		18+0-2f	„ „	H	„
tenuiflorum (*comosum*)		18+0-2f	„ „	H	Med., S.W. Asia
botryoides		36	„ „	H	Eur., S.W. Asia
conicum		36	Greeves, T. 1931	H	S. Europe
pallens		36	Delaunay 1926	H	Caucasus
commutatum		45	„ „	H	Sicily
neglectum		45	„ „	H	Medit.
racemosum	Grape H.	45	„ „	H	Med., Cauc.
		54	Wunderlich 1937		
DRIMIOPSIS $x=10$					
botryoides		40	M. & S. 1935	—	Trop. Africa
EUCOMIS $x=15, 16$					
bicolor		32	Darlington 1932b	H	S. Africa
		30	M. & S. 1935		„
undulata		30	Koeperich 1930	H	„
punctata		60	M. & S. 1935	H	„
pallidiflora		60	Sato 1935a	—	„
CAMASSIA $x=15$					
esculenta	Quamash	30	Nakajima 1936	HR	U.S.A.
cusickii		30	Greeves, T. 1931	H	Oregon
leichtlinii		30	F. H. Smith 1942	H	California

BRODIAEA $x=5, 6, 7, 8$					
californica		10	Johansen 1932	H	California
		12	Burbanck 1941		
stellaris		12	,, ,,	H	California
minor (purdyi)		12, 32	,, ,,	H	Argentine
		14	Johansen 1932		
elegans		32	Burbanck 1941	H	California
coronaria (grandiflora)		42	,, ,,	HR	,,
		36	K. 1931		
lactea		42-48	F. H. Smith 1933	H	W:N. Amer.
TRITELEIA (BRODIAEA) $x=5, 7, 8, 9$					
ixioides v. *scabra*		10, 10+f	Burbanck 1941	H	California
v. *analina*		50	,, ,,		
peduncularis		14, 28	,, ,,	H	California
hyacinthina	Wild Hyacinth	28	,, ,,	H	,,
laxa etc.	Grass Nut	18, 28, 42, 48	,, 1941,'44	H	,,
bridgesii		16	,, 1941	H	Cal. Oregon
crocea (Bloomeria?)		16, 18	,, 1941,'44	H	,,
hendersoni		32	,, 1941	H	Oregon
DICHELOSTEMMA (BRODIAEA) $x=9$					
volubile		18	Burbanck 1941	H	California
		36	Johansen 1932		
pulchellum (capitata)	Blue Dicks	18	Burbanck 1941	H	W: U.S.A.
congestum (B. pulchella)		36	,, ,,	H	,,
		72	Johansen 1932		
ALLIUM $x=7, 8, 9$ [Some species Apomictic]					
$x=7$					
alleghaniense		14	Levan 1932	—	N. America
cernuum	Wild Onion	14	,, 1935	(V)	,,
moly	Lily Leek	14	,, 1932	H	Europe
narcissiflorum	Narcissus O.	14	,, ,,	H	,,
neapolitanum	Daffodil O.	14	,, 1935	HRV	Eur., S.W. Asia
scorzoneraefolium		14	Mensinkai 1940		S. Europe
stellatum	Prairie O.	14	Anderson 1931	(R)	N. America
ursinum	Ramsons	14	Levan 1932	RVH	Eur., N. As.
amplectens		[14], 21, 28	,, 1940b		Cal., Oregon
pendulinum		14, 18	,, 1935	H	Eur., N. Afr.
macranthum		14	,, 1933	—	Himalayas
		28	Mensinkai 1940		
validum	Pacific O.	28	Levan 1935	—	N. America
tartaricum	Tartar O.	28-32	,, 1931	V	E. Eur., Sib.
$x=8$					
albidum		16	Levan 1931	—	S.W. As., Siberia
alpinum		16	Mensinkai 1940	—	N. Temp.

ALLIUM (*cont.*)

amblyophyllum		16	Levan 1931	—	Turkestan
ammophyllum	Gold Ball O.	16	,, ,,	—	Siberia
as *angulosum*		16	Koshy 1934		—
ascalonicum	Shallot	16	Levan 1931	RV	*cult*
atroviolaceum		16	,, ,,	—	Eur., S.W. Asia
azureum (*caeruleum*)		16	,, ,,	H	Siberia
canadense	Tree O.	16	La Cour unp.	V	N. America
caeruleum		16	Mensinkai 1940	H	Siberia
cepa	Garden O.	16	Levan 1935	RV	*cult*, Persia
cilicicum		16	Mensinkai 1940	—	Asia Minor
decipiens		16	,, ,,	—	Cauc., Sib.
farreri		16	Levan 1935	—	China
fistulosum	Welsh O.	16	,, ,,	V	Siberia
flavum	Yellow O.	16	,, ,,	H	,,
giganteum	Giant O.	16	,, ,,	V	Himalayas
heldreichii		16	,, ,,	—	Greece
hymenorrhizum		16	,, ,,	—	A.M. Pers.
ledebourianum		16	Mensinkai 1940	—	E. Eur.
lusitanicum	Perenn. Welsh O.	16	La Cour unp.	V	Medit.
nigrum (*magicum*)	Black O.	16	Levan 1935	—	Eur., S.W. Asia
obliquum	Siberian Garlic	16	,, ,,	SpV	Siberia
ostrowskianum		16	,, ,,	H	Turkestan
pallasii (*pallyssium*)		16	Y. Ono 1935	—	Siberia
paniculatum		16	Levan 1935	—	Eur., S.W. Asia
proliferum		16	Ono 1935	RV	Pers., Bal.
pulchellum		16	Levan 1935	H	Eur., S.W. Asia
pyrenaicum		16	Y. Ono 1935	—	Pyrenees
rosenbachianum		16	Levan 1935	H	Bokhara
rubellum		16	Mensinkai 1940	VR	Eur., S.W. Asia
sativum	Garlic	16	Levan 1935	SpV	Europe
saxatile		16	,, ,,	—	Cauc., Sib.
schuberti		16	,, ,,	—	S.W. Asia
scorodoprasum	Racambole	16	,, ,,	RV	Eur., Cauc., Syr.
siculum (*dioscoridis*)		16	Mensinkai 1940	—	S. Eur., S.W. Asia
sphaerocephalum	Roundheaded G.	16	Levan 1935	SpV	Eur., Sib.
stellerianum		16	Mensinkai 1940	—	Siberia
stipitatum		16	Levan 1935	V	C. Asia
strictum	Streak-leaf G.	16	,, ,,	—	Eur., S.W. Asia
subtilissimum		16	Mensinkai 1940	—	Sib., Altai
suworowii		16	Levan 1935	—	C. Asia
thunbergii		16	Y. Ono 1935	—	China, Jap.

ALLIUM (*cont.*)					
viviparum		16	Mensinkai 1940	—	Siberia
ammophilum		16, 32	Levan 1935	—	Europe
margaritaceum		16, 32	Mensinkai 1940	—	Eur., S.W. Asia
nipponicum		16	Y. Ono 1935	—	Japan
		32	Katayama 1936	—	
ramosum (*odorum*)		16, 32	La Cour unp.	H	Siberia
schoenoprasum	Chives	16, 24, 32	Levan 1936	V	N. Temp.
victoriale		16	,, 1935	—	S. Eur., As.
		32	M. & S. 1935		
yunnanense (*mairei*)		16, 32	Levan 1935	—	China
angulosum	Mouse Garlic	16-100	Levan 1935	V	Siberia
nutans		16-108	,, ,,	—	,,
carinatum		24	Levan 1937b	—	Europe
ampeloprasum (*porrum*)	Wild Leek	32	La Cour unp.	V	Eur., S.W. Asia
bakeri		32	Katayama 1936	—	China, Jap.
ciliare		32	Y. Ono 1935	—	Eur., S.W. Asia
cyaneum		32	Mensinkai 1940	H	China
odorum	Fragrant-Flowered G.	32	Y. Ono 1935	H(V)	Siberia
porrum	Leek	32	Levan 1931	V	*cult*, Persia
rotundum		32	,, ,,	—	Eur., A. Min.
sikkimense		32	,, ,,	—	Himalayas
splendens		32	Sakai 1934	H	Siberia
tuberosum	Gynmigit	32	La Cour unp.	V	Him., Ch., Japan
vineale	Crow G.	32	Y. Ono 1935	VSp	Europe
oleraceum	Field G.	32	Levan 1937b	Sp	,,
		40	Y. Ono 1935		
roseum		32	Levan 1935	V	Medit.
v. *bulbilliferum*		48	Messeri 1931		
senescens		32	Y. Ono 1935	R	Eur., Sib.
		48	Mensinkai 1940		
babingtonii (*ampeloprasum*)		40	Y. Ono 1935	V	Europe
		48	Maude 1940		
$x=9$					
karataviense		18	Levan 1935	H	Turkestan
striatum		18	Y. Ono 1935	—	N. Amer., Mexico
triquetrum		18	Levan 1935	—	Eur., N. Afr.
zebdanense		18	,, ,,	—	Syria, Arm.
NOTHOSCORDUM (ALLIUM) $x=8, 9$ [Triploid Apomictic]					
fragrans		16, 24	Messeri 1931	HSp	Mexico
		18	Levan 1935		
		16 etc.	E. Garber 1944		
striatum		16	Levan 1935	—	Va.—Mex.
as *bivalve*		18	Beal 1932		

BREVOORTIA (DICHELOSTEMMA) $x=8$						
ida-maia	Floral Fire Cracker	*c.* 40 48	Johansen Burbanck	1932 1941	H	Calif.

TRIBE III : TULIPEAE

CALOCHORTUS $x=6, 7, 8, 9, 10$						
(i) *superbus*		12, 14	Beal & O.	1943	H	Calif.
catalinae		14	„	„	H	„
leichtlinii		14	„	„	H	W: N. Amer.
luteus	Sego Lily	14+0-1f 20, 21	„	„	H(R)	Calif.
splendens		14	„	„	H	„
venustus	Wh. Mariposa L.	14+0-1f	„	„	H	„
davidsonianus		28	„	„	H	„
vesta		28	„	„	H	N. America
(ii) *macrocarpus*		14	„	„	H	W: N. Amer.
(iii) *clavatus*		16	„	„	H	Calif.
kennedyi		16	„	„	H	W: N. Amer.
nuttallii	Sego Lily	16	„	„	H	Calif.
aureus		32	„	„	H	
(iv) *ambiguus*		18	„	„	H	W: N. Amer.
gunnisoni		18	„	„	H	—
(v) *plummerae*		18	„	„	H	Calif.
weedii		18	„	„	H	„
(vi) *barbatus*		36	„	„	H	Mexico
(vii) *albus*		20	„	„	H	„
amabilis		20	„	„	H	N. America
amoenus		20	„	„	H	W:N. Amer.
pulchellus		20	„	„	H	Calif.
(viii) *apiculatus*		20	„	„	H	W: N. Amer.
elegans		20	„	„	H(R)	„
lobbii		20	„	„	H	N. America
monophyllus		20	„	„	H	Calif.
tolmiei		20	„	„	H	„
(ix) *nudus*		20	„	„	H	„
umbellatus		20	„	„	H	„
uniflorus		40	„	„	H	„
(x) *howellii*		20	„	„	H	Oregon
lyallii		20	„	„	H	W: N. Amer.
nitidus		20	„	„	H	Calif.
persistens		20	„	„	H	—
longebarbatus		20, 30	„	„	H	W: N. Amer.
pavonaceus		40	„	„	H	—
FRITILLARIA $x=12$, by fusion and fragmentation, 9, 13						
(i) *ruthenica*		18	Darlington	1936c	H	Caucasus
nigra (*tenella, caussolensis*)		18+0-3f	La Cour	unp.	—	S. Europe

FRITILLARIA (*cont.*)

(ii) *acmopetala*		24	Darlington 1936c	H	Syria
askabadensis		24	„ „		Transcauc.
camtschatcensis		24, 36	Matsuura 1935	H	Japan
citrina		24	Darlington 1936c	H	Asia Minor
dasyphylla		24, 36	„ „	H	„
eggeri		24	„ „	—	Persia
elwesii		24	„ „	—	Asia Minor
gracilis		24	„ „	—	Dalmatia
hispanica		24	„ „		Spain
imperialis	Crown Imp. L.	24+0-12f	„ „	H	Persia
karadaghensis		24	„ „	—	N. Persia
latifolia		24, 36	„ „	H	Caucasus
libanotica		24	„ „	—	Syria
meleagris	Snake's Head L.	24	„ „	H	Europe
meleagroides		24	„ „	H	C. Asia
obliqua		24+2f	„ „	H	Greece
oranensis		24	„ „	—	Algeria
pallidiflora		24	„ „	H	S. Siberia
pontica		24	„ „	H	Asia Minor
drenowskii		24	Darlington & L. C. 1941	—	Bulgaria
involucrata		24	„ „	—	W. Alps
armena		24	La Cour unp.	—	Armenia
sewerzowi		24	„ „	—	C. Asia
(iii) *phenanthera*		24	Darlington 1936c	—	California
pluriflora	Adobe L.	24+2f	„ „	H	„
lanceolata		24+1f, 36	„ „	H	„
recurva (coccinea)		24+1f, 36	„ „	H	„
pudica		26, 39	„ „	H	„

NOMOCHARIS $x=12$

mairei		24	Darlington 1936b	H	Yunnan
pardanthina		24	„ „	H	China
saluenensis		24	„ „	H	Yunnan
nana		48	„ „	H	Burma

LILIUM $x=12$

alexandrae		24	Sansome & L. C. 1934	H	—
amabile		24	„ „	H	N. Asia
auratum		24	Sato 1932	HR	Japan
bolanderi		24	Sansome & L. C. 1934	H	California
brownii		24	Sato 1932	H	China
candidum	Madonna L.	24	Sansome & L. C. 1934	H	S. Eur., Syr.
centifolium		24	„ „	H	China
cernuum		24	„ „	H	N. Asia
chalcedonicum		24	„ „	H	Carniola
columbianum		24	„ „	H	W. N. Amer.

LILIUM (*cont.*)

concolor (*coridium*)		24	Sato 1932	HR	Jap., China
cordifolium		24	Sansome & L. C. 1934	H	Japan
croceum		24	„ „	H	S. Europe
davidii		24	Beal 1942	H	China
davuricum		24	Sato 1932	H	N. China
elegans		24	„ „	H	Japan
giganteum		24	„ „	H	Himalayas
grayi		24	„ „	H	W: N. Amer.
hansoni		24	„ „	H	Japan
humboldti		24	Sansome & L. C. 1934	H	California
longiflorum		24	Goodspeed *et al.* 1935	H	Japan, China
		(48)	Emsweller & L. 1943		
martagon		24	Sansome & L. C. 1934	HR	S. Europe
maximowiczii (*leichtlinii*)		24	Sato 1932	H	Japan
medeoloides		24	Sansome & L. C. 1934	H	„
pardalinum	Leopard L.	24	„ „	H	California
as *roezlii*		24	„ „	H	„
philadelphicum		24	„ „	H	N. America
philippinense		24	„ „	H	Philippines
pyrenaicum		24	„ „	H	Pyrenees
regale		24	„ „	H	China
speciosum		24	„ „	HR	Japan
satchuenense		24	„ „	H	China
tenuifolium		24	„ „	H	N. China
testaceum (*excelsum*)		24	„ „	H	*cult*
tigrinum	Tiger Lily	24	Sato 1932	HR	China, Jap.
		36+0-1f	Sansome & L. C. 1934		
umbellatum		24	„ „	H	*cult*
wallacei		24	„ „	H	Japan
formosum		24+0-2f	Sato 1932	H	„
henryi		24+1-2f	Mather 1935	H	China
japonicum		24+1-2f	Sansome & L. C. 1934	HR	Japan
batemanniae		24+1f	Stewart 1943	H	*cult*
canadense		24+1f	„ „	HR	N. Amer.
pumilum (*tenuifolium*)		24+0-2f	„ „	H	N. China
tsingtauense		24+1f	„ „	H	China
willmottiae		24+1f	„ „	H	„

TULIPA $x=12$

S. 1: *ERIOSTEMONES*

aucheriana	24	Upcott & L. C. 1936	H	Pers., Syria

TULIPA (*cont.*)

australis	24	Upcott & L. C.	H	S. Eur., N. Africa
biflora	24	" "	H	Casp., Cauc.
cretica	24	" "	H	Crete
griesbachii	24	" "	H	S. Eur., Syr.
orphanidea	24	" "	H	Greece
persica	24	" "	H	S. Spain, N. Africa
polychroma	24	" "	H	Persia
primulina	24	" "	H	E. Algeria
pulchella	24	" "	H	Asia Minor
tarda	24	" "	H	Turkestan
urumiensis	24	" "	H	N.W. Persia
violacea	24	" "	H	N. Persia
saxatilis	36, 48	" "	H	Crete
sylvestris	48	" "	H	Europe
turkestanica	48	" "	H	S. Russia
whittalli	48	" "	H	Asia Minor

S. 2: *LEIOSTEMONES* (brackets enclose species with mere colour differences)

(i) {*batalini*	24	Upcott & L. C. 1936	H	Bokhara
linifolia	24	" "	H	"
maximowiczii}	24	" "	H	"
{*chrysantha*	24, 48	" "	H	Persia
clusiana}	24	" "	H	Tibet
	48	" "	H	Himalayas
	60	" "	H	Medit.
(ii) *altaica*	24	" "	H	C. Asia
ferganica	24	La Cour unp.	H	"
ostrowskiana	24	Upcott & L. C. '36	H	E. Turkest.
sprengeri	24	" "	H	Asia Minor
kolpakowskiana	24, 48	" "	H	Turkestan
korolkowi	24, 48	" "	H	"
(iii) *borsczowi*	24+0-6f	" "	H	Pers., C. As
cypria	24	" "	H	Cyprus
kuschkensis	24	" "	H	C. Asia
oculis-solis	24	" "	H	S. Fr., N. It
schmidtii	24	" "	H	S. Caucasus
stapfii	24	" "	H	Persia
undulatifolia	24	" "	H	Asia Minor
aleppensis	36	" "	H	Syria
lanata	36	" "	H	C. Asia
praecox	36	" "	H	S. Fr., N. I
(iv) {*armena*	24	" "	H	Asia Minor
galatica}	24+2+12f	" "	H	"
boeotica	24	" "	H	Greece
planifolia	24	" "	H	—
rhodopea	24	" "	H	Bulgaria

TULIPA (*cont.*)					
suaveolens		24	Upcott & L. C. '36	H	S. Russia, Asia Minor
gesneriana	Garden Tulip	24, 36	,, ,,	H	*cult*, Persia
(v) *amabilis*		24	,, ,,	H	Transcaspia
eichleri		24	,, ,,	H	Transcauc.
fosteriana		24	,, ,,	H	C. Asia
greigi		24	,, ,,	H	Turkestan
hoogiana		24	,, ,,	H	C. Asia
ingens		24	,, ,,	H	,,
kaufmanniana		24	,, ,,	H	Turkestan
micheliana		24	,, ,,	H	Pers., C. As.
praestans		24	,, ,,	H	C. Asia
(vi) *edulis*		48	,, ,,	R	Japan
GAGEA $x=12$					
graminifolia		24	Romanov 1936	—	Transcasp.
minima		24	Westergaard 1936	—	Eur., N. As.
tenera		36	Romanov 1936	—	Turkestan
arvensis		48	T. 1938	—	S. Europe
lutea (*silvatica*)		72	Westergaard 1936	H	Eur.—Him.
spathacea		*c.* 102	,, 1936	—	Europe
ERYTHRONIUM $x=12$					
dens-canis	Dog's Tooth Violet	24	Hruby 1934b	H	Eur., N. As.
californicum	Fawn L.	24	La Cour unp.	H	California
hendersonii		24	,, ,,	H	Oregon
revolutum		24	,, ,,	H	California
LLOYDIA $x=12$					
serotina		24	Newton 1927	H	Europe
ALBUCA					
major		—		V	S. Africa

TRIBE IV : KNIPHOFIEAE

KNIPHOFIA $x=6$					
pulchella		12	M. & S. 1935	H	—
burchellii		12	Moffett 1932b	H	S. Africa
leichtlinii		12	,, ,,	H	Abyssinia
natalensis		12	,, ,,	H	S. Africa
nelsonii		12	,, ,,	H	,,
northiae		12	,, ,,	H	,,
sarmentosa		12	,, ,,	H	,,
aloides (*uvaria*)	Red Hot Poker	12, 13	Webber 1932	H	,,

TRIBE V : ALOINEAE

ALOË $x=7$					
ferox	Cape A.	14	Fernandes 1931	M	S. Africa
vera	Indian A.	14	Sutaria 1932	MV	Med., India

ALOË (*cont.*)					
73 species	Aloes	14	Sato 1937 Resende 1937	H	S. & E. Af India
GASTERIA $x=7$					
maculata		14, 28	S. 1937, R. 1937	H	S. Africa
26 species		14	Sato 1937 Resende 1937	H	,,
HAWORTHIA $x=7$					
tesselata		14, 28, 42	S. 1937, R. 1937	H	S. Africa
reinwardtii		28, 42	,, ,,	H	,,
coarctata		42	Resende 1937	H	,,
36 species		14	S. 1937, R. 1937	H	,,
APICRA (HAWORTHIA) $x=7$					
aspera		14	N. Ferguson 1926	H	S. Africa
deltoides		14	,, ,,	H	,,
pentagona		28	,, ,,	H	,,
congesta		*c.* 18	Marshak 1934	H	,,

TRIBE VI : ASPHODELEAE

EREMURUS $x=7$					
altaicus		14	Burström 1929	H	Manch., Sib.
himalaicus		14	,, ,,	H	Himalayas
robustus		14	,, ,,	H	Turkestan
spectabilis		14	Upcott 1936a	HV	A. Min., Persia
CHLOROPHYTUM (ANTHERICUM) $x=7$					
comosum (sternbergianum)		28	R. Yamazaki 1936	H	S. Africa
elatum		28	,, ,,	H	,,
ANTHERICUM $x=7, 8$					
ciliatum		14	M. & S. 1935	—	Venezuela
roseum		32	Stenar 1928	—	—
ramosum		32	Elvers 1932a	H	Europe
liliago	St. Bernard Lily	64	,, ,,	H	Eur., N. Af
BULBINE $x=7, 13$					
annua		14	Straub 1938	H	S. Africa
asphodeloides		14	,, ,,	—	,,
caulescens		14	,, ,,	H	,,
praemorsa		14	,, ,,	—	,,
tetraphylla		14	,, ,,	—	,,
triebneri		14	,, ,,	—	,,
semibarbata		26	,, ,,	—	Australia
CHRYSOBACTRON (BULBINELLA) $x=7$					
hookeri		14	Hair 1942	H	New Zeal.
PARADISEA $x=8$					
liliastrum	St. Bruno Lily	32	Stenar 1928	H	Pyren., Al

ARTHROPODIUM $x=11$					
candidum		22	Hair 1942	H	New Zeal.
cirrhatum		44	,, ,,	H	,,

TRIBE VII : UVULARIEAE

UVULARIA $x=7$					
grandiflora		14	Anderson & W. 1934	H	E:N. Amer.
perfoliata		14	,, ,,	H	,,
sessile		14	,, ,,	H	,,
GLORIOSA $x=11$					
rothschildiana		22	E.K.J.	H	Trop. Africa
simplex		22	,,	HM	,,
superba		22	T. 1931, E.K.J.	HM	Trop. Asia

TRIBE VIII : POLYGONATEAE

CLINTONIA $x=7$					
udensis		28	M. & S. 1935	H	Sib., Japan
uniflora		—		H	Oregon, B.C.
DISPORUM $x=8$					
sessile		16	M. & S. 1935	—	Japan
smilacinum		16	Hasegawa 1932	—	Japan, Sib.
pullum		16	,, ,,	H	Ind., Java, China
STREPTOPUS $x=8$					
japonicus		16+2ff	M. & S. 1935	H	Sib., N. Am.
amplexifolius		32	,, ,,	H	N. Am.
streptopoides		*c.* 54	,, ,,	H	Japan
MAIANTHEMUM $x=8?$					
bifolium	May L.	30, 36, 42	Stenar 1935, L. & L. 1942	H	N. Temp.
dilatatum		32 36	M. & S. 1935 Palmgren 1943	—	Cal.—Alaska, Japan
SMILACINA $x=9$					
japonica		36	M. & S. 1935	H	Japan
stellata		36	Stenar 1935	H	N. America
POLYGONATUM $x=9, 10, 11$					
falcatum		18	Berg 1933	—	Japan
latifolium		18	Hasegawa 1933	H	Europe
sp.		54	Berg 1933	—	—
biflorum	Small S. S.	20	Eigsti 1942	H	E: U.S.A.
humile		20	Hasegawa 1933	H	Eur., Sib.
japonicum	Amatokoro	20	,, ,,	HV	Japan
lasinianthum		20	,, ,,	—	,,
maximowiczii		20	M. & S. 1935	—	Sakhalin
officinale	Solomon's Seal	20	Berg 1933	HVM	Eur., Sib.
pubescens		20	Eigsti 1942	—	E: U.S.A.

POLYGONATUM (*cont.*)					
silvicolum		20	Hasegawa 1933	—	Japan
commutatum (*giganteum*)		20, 40	Eigsti 1942	—	N. America
canaliculatum		40	" "	—	E: U.S.A.
hondoense		22	M. & S. 1935	—	Japan
multiflorum	Solomon's S.	18, 24	Eigsti 1942	HV	N. Temp.
		29, 30	Dark, M. 1939		
verticillatum		27, 28	Berg, 1933	H	Eur., N. As
		30, 84	Dark, M. 1939		

TRIBE IX: DIANELLEAE

DIANELLA $x=8$					
intermedia		16	Hair 1942	H	New Zeal.

TRIBE X: VERATREAE

VERATRUM $x=8$					
longebracteatum		16	M. & S. 1935	—	Japan
maximowiczii		16	" "	—	"
oxysepalum (*album*)		32	" "	—	Eur., N. A
stamineum		32+2f	" "	—	Japan
album	White Hellebore	32	Stenar 1932	HM	Eur., N. A
nigrum	Black H.	64	Miller, T. 1931	HM	Eur., A. Mi
viride	American H.	—		HM	N. Americ
ZYGADENUS $x=8, 11$					
fremonti		22	Miller, T. 1931	—	California
chloranthus		32	" "	H	N. Americ
elegans		32	" "	H	"
STENANTHIUM $x=10$					
robustum	Feather Fleece	20	Miller, T. 1931	H	E. & C: U.S.A.

TRIBE XI: ASPARAGEAE

ASPARAGUS $x=10$					
crispus		20	Nagao 1938	H	S. Africa
lucidus		20	" "	—	Japan
medeoloides		20	" "	—	S. Africa
myryocladus		20	" "	H	Natal
officinalis	Asparagus	20	" "	MV	Eur., Sib.
plumosus	Fern A.	20	" "	H	S. Africa
tenuifolius		20	" "	H	S. Europe
sp.		40	" "	—	—
sprengeri		60	" "	H	S. Africa
		24?	Sugiura 1936b		
adscendens	Satawar	—		MV	Him., Afg
asparagoides	Smilax A.	—		H	S. Africa
racemosus	Racemose A.	—		HMRV	S. India
sarmentosus		—		V	India
verticillatus		—		V	Persia—Si

TRIBE XII : ANGUILLARIEAE

BAEOMETRA $x=11$					
columellaris		22	Miller, T. 1931	—	S. Africa
VELTHEIMIA $x=20$					
viridifolia		40	Coleman 1940	H	S. Africa

TRIBE XIII : HEMEROCALLIDEAE

HEMEROCALLIS $x=11$					
aurantiaca		22	Dark 1932	H	Japan
elmusae		22	„ „	H	—
flava	Common Day Lily	22	„ „	H	Eur., T. As.
hippeastroides		22	„ „	H	—
middendorfii		22	„ „	H	Amur.
vermusae		22	„ „	H	—
forrestii		22	Stout 1932	H	China
dumortierii		22	„ „	H	Japan
citrina		22	„ „	H	China
minor		22	„ „	H	N. Asia
multiflora		22	„ „	H	China
nana		22	„ „	H	„
plicata		22	„ „	H	„
thunbergii		22	„ „	H	Japan
fulva (disticha)		22	„ „	H	Eur., T. As.
		33	Nakamura 1934		
HOSTA (FUNKIA) $x=30$ [Apomixis]					
japonica (*lancifolia*) etc.		60	Akemine 1935	H	Japan
fortunei		60	Yasui 1935	H	„
plantaginea	Plantain L.	60	„ „	H	Jap., China
sieboldiana		60	„ „	H	Japan
venusta		60	„ „	—	„
clausa		90	„ „	—	Korea

TRIBE XIV : COLCHICEAE

BULBOCODIUM $x=11$					
vernum		22	Miller 1930	H	Europe
COLCHICUM $x=18, 19, 20, 21, 22, 27$					
bivonae		36	Levan 1940a	H	S. Europe
autumnale	Autumn Crocus	38	„ „	HM	Europe
		42	Newton, T. 1931		
neapolitanum		38	Levan 1940a	H	Italy
speciosum		38	„ „	H	Caucasus
byzantinum		40	„ „	H	Gr., A. Min.
giganteum		40	„ „	H	*cult*
bornmulleri		42	„ „	H	Asia Minor
variegatum	Levant A. C.	44	„ „	H	S. Europe
latifolium		54	„ „	H	Caucasus
montanum		54	„ „	H	S. Europe

MERENDERA (COLCHICUM) $x=?$					
bulbocodium		*c.* 60	Miller 1930	H	Spain
persica		—		H	Ind., Persia

TRIBE XV: TRICYRTIDEAE

TRICYRTIS $x=13$					
macropoda etc.		26	Sinoto & K. 1932	H	Japan
hirta		26	Miller 1930	H	"
pilosa etc.		26	" "	—	Himalayas
stolonifera	Toad Lily	26	" "	H	Formosa
formosana		25, 26	D. Sato 1939	—	"

TRIBE XVI: NARTHECIEAE

NARTHECIUM $x=13$					
ossifragum	Bog Asphodel	26	Wulff 1935	H	Europe
TOFIELDIA $x=14, 15$					
calyculata		28	Miller 1930	—	Eur, N. Am.
palustris (*pusilla*)		30	" "	—	N. Temp., Arctic
nutans		30	M. & S. 1935	H	Jap., N. Am., E. Sib.
japonica		60	" "	H	Japan
HELONIOPSIS $x=17$					
breviscapa		34	Ono 1926	—	Korea
orientalis		34	Nakajima 1933	—	Japan
pauciflora		34	Sakai 1934	—	"

TRIBE XVII: AGAPANTHEAE

AGAPANTHUS $x=15$					
umbellatus (*africanus*)	African L.	30	Darlington 1933a	H	S. Africa

TRIBE XVIII: HELONIDEAE

HELONIAS $x=17$					
bullata	Swamp Pink	34	Miller 1930	H	E. U.S.A.

TRIBE XIX: OPHIOPOGONEAE

LIRIOPE $x=18$					
minor	Lily Turf	36	M. & S. 1936	H	Japan
OPHIOPOGON (MONDO) $x=18$					
jaburan	Lily Turf	36	M. & S. 1936	H	Japan

TRIBE XX: ASPIDISTREAE

ASPIDISTRA $x=16?$ 18					
elatior		32, 36	K. 1931; T. 1936	H	Japan
lurida		—		H	China

ROHDEA (RHODEA) $x=18$					
japonica		36	Yamamoto, K. 1931	H	Japan

TRIBE XXI: CONVALLARIEAE

CONVALLARIA $x=19$					
majalis	Lily of the Valley	36	Newton, T. 1931	H	N. Temp.
		38	Berg 1933		
		38	La Cour unp.		
keiskii		38	M. & S. 1935	H	Japan
REINECKIA $x=19$					
carnea		38	Noguchi 1936	H	China, Jap.
		42	Hosono, K. 1931		

294. TECOPHILAEACEAE

TECOPHILAEA $x=12$					
cyano-crocus		24	La Cour unp.	H	Chile

295. TRILLIACEAE

PARIS $x=5$					
polyphylla		10+0-1f	Darlington 1941	(G)H	Himalayas
formosana		10+2f	Gotoh & K 1937	—	Formosa
tetraphylla		10	Darlington 1941	—	Japan
hexaphylla		10, 15	„ „	—	„
obovata		10, 15	„ „	—	„
quadrifolia	Herb P.	20	„ „	H	Europe
japonica (*Kinagusa*)		40	„ „	—	Japan
TRILLIUM $x=5$					
chloropetalum		10	Warmke 1937	—	California
declinatum (*gleasonii*)		10+3f	Gotoh 1937	—	C: U.S.A.
erectum		10	Darlington & L. C. 1940	H	E: N. Amer.
erythrocarpum (*undulatum*)		10	La Cour unp.	—	„
grandiflorum		10	Darlington & L. C. 1940	H	„
kamtschaticum		10	Haga 1937a	—	Japan
longiflorum		10	Resende 1937	—	N. America
luteum (*sessile*)		10	La Cour unp.	—	—
ovatum		10	Warmke 1937	—	W: N. Amer.
petiolatum		10	„ „	—	N.W: U.S.A.
recurvatum		10	Darlington & L. C. 1940	—	C: U.S.A.
		10-12	Gotoh 1937		
rivale		10	Warmke 1937	—	Oregon, Cal.
sessile		10	Darlington & L. C. 1940	H	E: U.S.A.
stylosum		10	„ „	H	S.E: U.S.A.
undulatum		10	Wilson *et al.* 1941	H	E: N. Amer.

TRILLIUM (*cont.*)					
hagae		15	Haga 1937b	—	Japan
smallii (*apetalon*)		20	„ 1937a	—	„
tschonoskii		20	„ 1937b	—	„
MEDEOLA *x*=7					
virginica	Ind. Cucumber	14	La Cour unp.	R	S.E: U.S.A
		14	Stewart & B. 1942		
SCOLIOPUS *x*=7					
bigelovii		14	Johansen 1932	—	N. Americ

296. PONTEDERIACEAE

MONOCHORIA *x*=7, 13					
hastaefolia		28	Banerji & H. 1942	(V)	Trop. Asia
vaginalis		52	Morinaga & F. 1931a	(V)	Tr. Afr. & Asia
EICHHORNIA *x*=16					
crassipes	Water Hyacinth	32	Taylor 1925c	H	Trop. Am

297. SMILACACEAE

SMILAX x=13, 14, 15, 16					
herbacea	Carrion Flower	26	Lindsay 1930	H	N. Am., Ja
glauca	Cat G.	28	Jensen 1937a	HM	N. Amer.
oldhami		32	„	M	Japan
rotundifolia	Greenbriar	32	„	HMR	„
sieboldi		32	Nakajima 1933	M	„
hederacea		30	„ 1937	M	„
china	China Root	60	„ „	HMRT	Coch.-Chi —Japan
officinale	Sarsaparilla	—		HM	Chile, Per
medica	Mexican S.	—		M	Mexico
ornata	Jamaican S.	—		HM	„

298. RUSCACEAE

RUSCUS *x*=20					
aculeatus	Butcher's Broom	40	Nakajima 1936	HT	Eur., S.W Asia
		40	Maude 1940		
DANAË					
racemosa (*laurus*)	Alexandria Laurel	—		H	Gr.—Pers
SEMELE (DANAË)					
androgyna	Climbing B. B.	—		HV	Canaries

299. ALSTROEMERIACEAE

ALSTROEMERIA *x*=8					
aurantiaca		16	Whyte 1929	H	Chile
brasiliensis		16	„ „	H	Brazil
haemantha		16	„ „	H	Chile
psittacina (*pulchella*)		16	„ „	H	S. Americ

ALSTROEMERIA (*cont.*)					
lightii (*tricolor*)		16	La Cour unp.	H	Chile
rosea		16	„ „	H	„
chilensis		16	D. Sato 1938	H	„
BOMAREA *x*=9					
caldasiana		18	Whyte 1929	H	Guatemala
carderi		18	„ „	—	Peru, Col.
edulis	W. Ind. Jer. Artichoke	18	„ „	R	Trop. Amer.
patacocensis		18	„ „	H	Ecuador
salsilla		18	D. Sato 1938	R	Chile

302. ARACEAE

AGLAONEMA *x*=8					
pictum		16	Gow 1908	H	Malaya
DIEFFENBACHIA *x*=8					
picta		16	Gow 1908	H	S. America
SPATHIPHYLLUM *x*=9					
patinii (*candidum*)		18	M. & S. 1935	H	Columbia
CALLA *x*=9					
palustris	Water Dragon	36	M. & S. 1935	R	N. Temp.
		36, 72	Hagerup 1941		
AMBROSINA *x*=11					
bassii		22	Vignoli 1939	H	Medit.
ACORUS *x*=9, 12					
calamus	Sweet Flag	18	M. & S. 1935	HIMP	N. Temp.
		18	Dudley 1937		
		24, 36, 48	Wulff 1940a		
gramineus		24	„ „	HM	Him.—Jap.
MONSTERA *x*=12					
deliciosa	Ceriman	24	E.K.J.	FH	Mexico
SAUROMATUM *x*=13					
guttatum		26	Graft 1939	H	N.W. India
as *Arum cornutum*		32?	Haase-Bessel 1930		
ALOCASIA *x*=13					
macrorrhiza		26	M. & S. 1935	R	O. W. Trop.
XANTHOSOMA *x*=13					
sagittifolium	Coco Yam, Yautia	26	E.K.J.	R	Tr. Amer., W. Indies
AMORPHOPHALLUS *x*=13, 14					
konjac	Konjak	26	Nakajima 1933	R	Coch.-Ch., Japan
sylvaticus		26	Asana & S. 1937	—	India
campanulatus	Ol	28	Patel & N. 1937	R(V)	Trop. Asia
		26	Asana & S. 1937		

ARISAEMA $x=13, 14$					
quinatum		28	Bowden 1940a	R	S.E: U.S.A
serratum		26	Nakajima 1933	H	Japan
thunbergi		28	,, ,,	—	,,
murrayi		28	Asana, T. 1936	—	Himalayas
concinnum		56	Bowden 1940a	R	,,
dracontium		56	,, ,,	H	E: U.S.A.
triphyllum	Indian Turnip	56	,, ,,	HR	E: N. Amer
PISTIA $x=14$					
stratiotes	Water Lettuce	28	Blackburn 1933	MaM(V)	Tropics
COLOCASIA $x=14$					
antiquorum (*esculenta*)	Taro Yam, Dasheen	28	Asana & S. 1939	R	India, *cult*
v. *gigantea*		42	Nakajima 1936,	R	
		42	E.K.J.		
ARUM $x=14$					
maculatum	Cuckoo Pint	28	Hagerup, L. & L. 1942	(R)	Europe (Sweden)
		56, 84	Maude 1940		(Britain)
italicum		64?	Dangeard 1937	R	Medit.
dioscoridis		—		R	,,
PHILODENDRON $x=17$					
andreanum		34	M. & S. 1935	H	Colombia
ANTHURIUM $x=?$					
gracile		30	Gaiser 1927	H	Guiana
andraeanum		*c.* 30	,, ,,	H	Colombia
magnificum		32	Haase-Bessel 1928	H	,,
scandens		*c.* 48	Gaiser 1927	H	Trop. Ame
radicans		*c.* 48	,, ,,	H	Brazil
crassinervum		*c.* 60	,, ,,	H	Pan., Ven.
digitatum		*c.* 60	,, ,,	H	W. Indies, Venez.
wallisii		*c.* 60	,, ,,	H	Colombia
30 other species		*c.* 30	,, ,,	H	—
PELTANDRA $x=?$					
undulata		*c.* 44	Duggar 1900	H	E: U.S.A.
ANCHOMANES					
hookeri		—		R	E. Tr. Af
ARISARUM					
vulgare		—		R	Medit.
ZANTEDESCHIA					
aethiopica	Common Calla	—		HMV	S. Africa

303. LEMNACEAE

LEMNA (SPIRODELA) $x=10, 11$					
minor	Duckweed	40	Blackburn 1933	H	Cosmop.
trisulca		44	,, ,,	—	Eur., Sib.
gibba		64	,, ,,	—	N. Hemisp

WOLFIA $x=?$					
arhiza		c. 50	Blackburn 1933	—	Temp.

304. SPARGANIACEAE

SPARGANIUM $x=15$					
minimum	Bur Reed	30	Wulff, T. 1938	—	Europe
ramosum	Bede Sedge	30	„ „	T	„
simplex		30	Hagerup 1941	—	„

306. AMARYLLIDACEAE

ZEPHYRANTHES (HABRANTHUS) $x=6$, etc. [Polyploids Apomictic]					
robusta		12	D. Sato 1938	H	Uruguay
tauberti		12	„ „	H	S. America
lindleyana		24	„ „	H	Mexico
texana		24	„ „	H	Texas
candida		38	Inariyama 1937	H	Argentine
carinata (*grandiflora*)		48	„ „	H	C. Am., Jam.
LYCORIS $x=6, 9, 11$ (by fusion from 11)					
sanguinea		22	Inariyama 1937	H	Japan
radiata (3*x*)		33	„ „	H	China
albiflora		17	„ „	H	*cult*
straminea		16	„ „	H	China
aurea		12, 13, 14	„ „	H	„ Jap.
squamigera (3*x*)		27	„ „	H	Japan
LEUCOJUM $x=7, 8, 9, 11$					
autumnale		14	Neves 1939	H	Medit.
trichophyllum		14	„ „	H	W. Medit.
roseum		16	„ „	H	Corsica
hyemale		18	„ „	H	S. Europe
aestivum		22	„ „	H	Eur., S.W. Asia
pulchellum		22	„ „	H	Balearics
vernum	Snowflake	22	„ „	H	Europe
NARCISSUS $x=7, 11$					
$x=7$					
angustifolius		14	Geitler 1935	H	—
cyclamineus		14	Fernandes 1934	H	Portugal
calcicola		14	„ 1939a	H	Spain
gaditanus		14	„ „	—	„
marvieri		14	„ „	H	„
rupicola		14	„ „	H	„
watieri		14	„ „	H	Morocco
juncifolius		14, 28	„ „	H	Spain, Fr.
		14+f	„ 1939b		
as *minutiflorus*		14	„ 1934		
jonquilla	Jonquil	14, 28	„ 1939a	H	Medit.
poeticus	Pheasant's Eye	14, 21, 28	Nagao 1933	H	Spain

NARCISSUS (*cont.*)					
reflexus		14	Nagao 1933	H	S. Europe
triandrus		14	„ „	H	Spain
		21	Philp 1934b		
bulbocodium	Petticoat D.	14, 21, 26, 35, 42	Fernandes 1934	H	Spain, Port
		14+f	„ unp.		
pallidiflorus		15	Philp 1934b	H	—
pseudonarcissus	Daffodil	14, 15, 20, 22, 28, 30	Nagao 1933	H	Eur., *cult*
as *obvallaris*		14	Philp 1934b	H	Britain
$x=11$					
broussonetii		22	Fernandes 1940	H	Morocco
tazetta	Polyanthus N.	22	„ 1937	H	Med., *cult*
		20-22, 30-34	Nagao 1933		
Hybrid Species					
gracilis		14	Pereira 1940	H	Europe
incomparabilis		14, 21	Nagao 1933	H	S. Europe
jonquilloides		21	Fernandes 1939a	H	Spain
odorus		14, 28	Pereira 1940	H	S. Europe
biflorus		24	Nagao 1933	H	Fr.—Tyrol
dubius		50	Fernandes 1939a	H	Medit.
GALANTHUS $x=7, 12$					
nivalis etc.	Snowdrop	24, 48, 28	D. Sato, T. '38	H	Eur. Cauc.
HAEMANTHUS $x=8$					
albiflorus		16	D. Sato 1938	H	S. Africa
		16+2f	„ „	H	*cult*
coccineus		16	„ „	H	S. Africa
VALLOTA $x=8$					
purpurea (*speciosa*)		16	Thornton, T. 1941	H	S. Africa
MIERSIA $x=10$ (11)					
chilensis		20, 21	Cave & B. 1943	H	Chile
AMARYLLIS $x=11$					
belladonna		22	D. Sato 1938	H	S. Africa
alba (*Crinum album*?)		39	„ „	H	Arabia
CLIVIA $x=11$					
miniata		22	Inariyama 1937	H	S. Africa
nobilis		22	„ „	H	„
CRINUM $x=11$					
asiaticum		22	Inariyama 1937	H	Trop. Asia
capense (*longifolium*)		22+2f	„ „	H	India
gigas		22	„ „	H	Bonin Is.
latifolium		22	„ „	H	India
lineare		22	D. Sato 1938	H	S. Africa
moorei		22	„ „	H	„
rattrayi		22	„ „	H	Trop. Afr
macrantherum		33	„ „	—	Melanesia
CYRTANTHUS $x=11$					
obliquus		22	D. Sato 1938	H	S. Africa

STERNBERGIA $x=11$					
lutea		22	Inariyama 1937	H	Medit.
		22	La Cour unp.		
HABRANTHUS $x=11$					
andersoni		21 (2*x*-1)	D. Sato 1938	H	Argentine
NERINE $x=11, 12$					
bowdeni		*c.* 22	James & A. 1941	—	S. Africa
undulata		22	Inariyama 1937	H	,,
curvifolia		22, 23	,, ,,	H	,,
flexuosa		22, 33	James & A. 1941	H	,,
humilis		33	Inariyama 1937	H	,,
pudica		33	,, ,,	H	,,
sarniensis	Guernsey L.	22, 33	James & A. 1941	H	,,
curvifolia		24	,, ,,	—	,,
filifolia		24	,, ,,	—	,,
HIPPEASTRUM $x=11$					
vittatum		44	Inariyama 1937	H	Peru
hybridum		44	,, ,,	H	*cult*
PANCRATIUM $x=11$					
illyricum		22	Brumfield 1941	H	S. Europe
		44	D. Sato 1938		
GRIFFINIA $x=11$					
blumenavia		77	D. Sato 1938	H	Brazil
HYMENOCALLIS (PANCRATIUM) $x=23$					
littoralis		46	D. Sato 1938	H	S. America
lacera		69	,, ,,	H	N. America
speciosa	Spider Lily	46	,, ,,	H	W. Indies
		90-100	Heitz 1926		
EUCHARIS $x=?$					
grandiflora	Amazon L.	68	D. Sato 1938	H	Colombia
SPREKELIA $x=?$					
formosissima		*c.* 117	D. Sato 1938	H	Mexico

307. IRIDACEAE

CROCUS $x=3, 4, 5, 6, 7,$ etc.					
$x=3, 4$					
aucheri		6	Mather 1932	—	Asia Minor
balansae		6	,, ,,	H	S.W. Asia
graveolens		6	,, ,,	—	Syria
hyemalis		6+4ff		H	,,
olivieri		6	,, ,,	—	Asia Minor
biflorus		7, 8	,, ,,	H	Eur., A. Min.
aerius		8, 14	,, ,,	H	Persia
aureus		8	,, ,,	H	Asia Minor
danfordiae		8	,, ,,		,,
stellaris		8, 11	,, ,,	H	Europe
zonatus		8	,, ,,	H	Asia Minor
chrysanthus		8, 9, 10	,, ,,	H	Bulgaria
vernus		8, 18, 19, 32	Karasawa 1932	H	Eur. (*cult*)

CROCUS (*cont.*)					
$x=5$-8					
ochroleucus		10	Mather 1932	—	Syria
reticulatus		10	" "	—	Caucasus
etruscus		11	" "		Italy
pulchellus		12	" "	—	Asia Minor
speciosus		12, 14, 16	Karasawa 1940	H	"
		12, 18	Mather 1932		
hueffelianus		14	" "	—	Hungary
sativus	Saffron	14, 15	" "	HMSp	Gr., A. Mi
		16, 40	Karasawa 1940		(*cult*)
		24	Sugiura 1931		
cancellatus		16	Mather 1932	HV	Asia Minor
hadriaticus		16	" "		E. Europe
tomasinianus		16	" "	H	Dalmatia
$x=10$-23					
fleischeri		20	" "	—	Asia Minor
karduchorum		20	" "	—	Kurdistan
korolkowii		20	" "	—	Turkestan
leichtlinii		20	" "	—	—
asturicus		22	" "	H	Spain
corsicus		22	" "	—	Corsica
sieberi		22	" "	—	Asia Minor
boryi v. marathoniseus		24	" "	—	Greece
malyi		24	" "	—	Dalmatia
salzmannii		24	" "	H	Morocco
imperati		26	" "	H	Italy
iridiflorus		26	" "	H	Europe
laevigatus v. fontenayii		26	" "	H	Greece
versicolor		26	" "	H	Europe
longiflorus		*c.* 28	" "	H	Italy
tournefortii		30	" "		S. Europe
nudiflorus		*c.* 46	" "	H	Eur., S.W. Asia
BABIANA $x=6$					
stricta		12	Brittingham 1934	H	S. Africa
plicata	Baboon Root	—		R	"
SPARAXIS $x=7$					
tricolor		14	Sugiura 1931	H	S. Africa
		20	Nakajima 1936	H	"
MARICA (NEOMARICA) $x=7$					
northiana		14	M. & S. 1935	H	Brazil
IRIS $x=7, 8, 9, 10, 12$ etc.					
(i) Bulbous Group					
S. 1: *XIPHION* $x=7, 8, 9.$ $x_2=8+9$					
tingitana		28	Simonet 1934a	H	N. Africa
		42	" "	H	*cult*

IRIS (*cont.*)

xiphioides		42	Simonet 1934a	H	S. Europe
juncea		32	„ „	H	N. Africa
as *lusitanica*		34	„ „	H	„
xiphium		34, 36	„ „	H	Spain
S. 2 : *RETICULATA* $x=8, 10, 14$					
histrioides		16, 17	Simonet 1934a	H	A. Min., Syria
winogradowii		16	„ „	H	Transcauc.
histrio		20	„ „	H	Palestine
hyrcana		20	„ „	H	Caucasus
vartanii		20	„ „	H	Syria
reticulata		20	„ „	H	A. Min., Persia
danfordiae		28	„ „	H	Cilicia
S. 3 : *JUNO* $x=9, 11, 12, 13$					
caucasica		18	Simonet 1934a	H	Caucasus
bucharica		22	„ „	H	S.W. Asia
orchioides		22	„ „	H	Turkestan
sindjarensis		22	„ „	H	Mesopot.
alata		24	„ „	H	Medit.
warleyensis		24	„ „	H	S.W. Asia
persica		26	„ „	H	Persia
S. 4 : *GYNANDRIRIS* $x=12$					
sisyrinchium	Spanish Nut	24	Simonet 1934a	HSp	Med.—Afg.
(ii) Rhizomatous Group					
S. 5 : *APOGON* $x=7, 8, 10, 11, 12$ etc.					
$x=7$					
orientalis (*sibirica*)		14	Simonet 1934a	H	Eur., N. As.
tenuis		28	„ „	H	W:N. Amer.
prismatica		42	„ „	H	N. America
verna		42	„ „	H	„
$x=8$					
sintenesii		16, 32	Simonet 1934a	H	It.—A.M.
humilis		72	„ „	H	Cauc., Altai
$x=10$					
urumovii		20	Simonet 1934a	H	Europe
aurea		40	„ „	H	Himalayas
bulleyana		40	„ „	H	China
chrysographes		40	„ „	H	„
delavayi		40	„ „	H	„
douglasiana (*watsoniana*)		40	„ „	H	W:N. Amer.
ensata (*pabularia*)		40	„ „	H	Him., N. As.
foetidissima		40	„ „	HM	Eur., S.W. Asia
forrestii		40	„ „	H	China
gormanii		40	„ „	H	Oregon

IRIS (*cont.*)

ochroleuca		40	Simonett 1934a	H	Asia Minor
tenax		40	" "	H	W:N. Amer
wilsoni		40	" "	H	China
$x=11$					
minuta		22	Simonet 1934a	H	Japan
spuria		22	Westergaard 1938	H	Europe
carthaliniae		44	Simonet 1934a	H	Caucasus
foliosa		44	" "	H	C: U.S.A.
halophila		44	" "	H	C. Asia
$x=12, 15, 16, 17, 19$					
kaempferi		24	Simonet 1934a	H	Manch., Japan
grant-duffii		24	" "	H	Pal., A.M.
pseudacorus	Yellow Flag	24, 30, 34	L. & L. 1942	(B)P	Eur., Med.
laevigata	Blue Flag	32	Kazao 1929	HM	E. & N. As
graminea		34	Simonet 1934a	H	S. Europe
maritima		38	" "	H	W. Europe
setosa		38	" "	HR	Siberia
unguicularis		38	" "	H	Morocco
virginica		54, 56, 70	Anderson 1936	H	N. America
ruthenica		*c.* 84	Simonet 1934a	H	Siberia
longipetala		*c.* 86	" "	H	W: N. Ame
versicolor	Blue Flag	72, 84, 105	" "	HM	N.E: N. Am
S. 6: *POGONIRIS* $x=8, 10, 11, 12, 22$					
$x=8$					
attica		16	Simonet 1934a	H	E. Eur., As Minor
mellita		24	" "	H	Thrace
reichenbachia		24, 32	Simonet 1934a	H	Balkans
		40	Randolph 1935		
as *balkana*		48	Simonet 1934a		
pumila		32, 36	" "	H	Eur., N. A
$x=10$ (Dwarf Bearded Irises)					
chamaeiris		40	Simonet 1934a	H	S. Europe
olbiensis		40	" "	H	"
subbiflora (*biflora*)		40	" "	H	Port., Spai N. Africa
$x=11$ (or $10+12$)					
flavissima		22	Simonet 1934a	H	Siberia
albicans		44	" "	H	Arabia
germanica	Orris-root	44	" "	HP	Europe
kashmiriana		44	" "	H	Himalaya
kochii		44	" "	H	Europe
$x=12$ (Tall Bearded Irises)					
albertii		24	Simonet 1934a	H	Turkestan
florentina		24,	" "	H	S. Europe
		48	Kazao 1929		

IRIS (*cont.*)					
imbricata		24	Simonet 1934a	HP	S.W. Asia
macrantha		24	” ”	H	*cult*
pallida (*cengialtii*)		24	” ”	HP	S. Eur., Syr.
variegata		24	” ”	H	Balkans, *cult*
aphylla		24, 48	” ”	H	Eur., Cauc.
cypriana		48	” ”	H	Cyprus
mesopotamica		48	” ”	H	Mesopot.
trojana		48	” ”	H	Asia Minor
—	Bearded Irises	24, 24+ 36, 40, 44+	Randolph 1935	H	*cult*
		48 ± 1, 60	Simonet 1934a		
S. 7: *ONCOCYCLUS* $x=10$					
acutiloba		20	Simonet 1934a	H	Pers., Cauc.
atropurpurea		20	” ”	H	Syria
ewbankiana		20	” ”	H	S.W. Asia
iberica		20	” ”	H	”
lortetii		20	” ”	H	Syria
mariae		20	” ”	H	Egypt
paradoxa		20	” ”	H	Caucasus
sari		20, 21	” ”	H	Asia Minor
schelkownikowii		20	” ”	H	—
sofarana		20	” ”	H	Lebanon
susiana		20	” ”	H	Persia
urmiensis		20	” ”	H	”
S. 8: *REGELIA* $x=11$					
korolkowii		22, 33, 44	Simonet 1934a	H	Turkestan
hoògiana		33, 44	” ”	H	”
atrofusca		44	” ”	H	Palestine
stolonifera (*leichtlinii*)		44	” ”	H	Turkestan
vaga		44	” ”	H	”
S. 9: *EVANSIA* $x=13, 14, 15, 16, 17, 18$					
milesii		26	Simonet 1934a	H	Himalayas
tectorum	Wall Iris	28	” ”	HR	Japan
formosana		28	Yasui 1939	H	Formosa
wattii		30	Simonet 1934a	H	Assam—Yunnan
cristata	Crested Iris	32	” ”	HSp	N. America
japonica		34, 54	Kazao 1929	HR	Japan, *cult*
		36, 54	Yasui 1939		
gracilipes		36	Simonet 1934a	H	Japan
lacustris		42	” ”	H	N. Amer. (Gr. Lakes)
HERMODACTYLUS (IRIS) $x=10$					
tuberosus	Snake's Head I.	20	Simonet 1928a	H	S.Fr.—Greece
BELAMCANDA $x=8$					
chinensis	Blackberry Lily	32	Nakajima 1936	H	China

LAPEYROUSIA $x=8$					
cruenta		16	Brittingham 1934	H	S. Afr. (Cape)
HOMERIA $x=9$					
elegans		36	Brittingham 1934	H	S. Africa
WATSONIA $x=9$					
iridifolia		18	Nakajima 1936	H	S. Africa
SISYRINCHIUM $x=9, 17$					
striatum		18	Vilmorin & S. 1927b	H	Chile, Arg.
californicum		34	Maude 1940	H	Oregon, Ca
DIERAMA $x=10$					
pendula		20	Vilmorin & S. 1927b	H	S. Africa
TRITONIA $x=10, 11$					
crocata		20	Brittingham 1934	H	S. Africa
crocosmaeflora	Montbretia	22, 33, 44	„ „	H	*cult*
pottsii		22	Nakajima 1936	H	S. Africa
IXIA $x=10$					
crateroides		20	Brittingham 1934	H	S. Africa
hybrida		40	„ „	H	*cult*
maculata		30	Nakajima 1936	H	S. Africa
speciosa (*Gl. coccinea*)		60	Bamford 1935	H	„
FREESIA $x=11$					
leichtlinii		22	La Cour unp.	H	S. Africa
refracta		22	Brittingham 1934	H	„
hybrida		22, 33, 44	Lawrence unp.	H	*cult*
TIGRIDIA $x=13$					
pavonia	Tiger Flower	26	Brittingham 1934	H	Mexico
ANTHOLYZA $x=13, 16$					
paniculata		26	Brittingham 1934	H	S. Africa
aethiopica		32	Nakajima 1936	H	„
GLADIOLUS $x=15$					
(i) *alatus* (*namaquensis*)		30	Bamford 1935	H	S. Africa
permeabilis		30	„ „	H	„
formosus		45	„ „	H	*cult*
(ii) *cardinalis*		30	„ „	H	S. Africa
carmineus		30	„ „	H	„
splendens		30	„ „	H	„
(iii) *blandus*		30	„ „	H	„
callistus		30	„ „	H	„
crassifolius		30	„ „	H	„
hirsutus		30	„ „	H	„
odoratus		30	„ „	H	„
oppositiflorus		30	„ „	H	Madagascar
undulatus		30	„ „	H	S. Africa
papilio		75	„ „	H	*cult*

GLADIOLUS (*cont.*)						
(iv) *byzantinus*		90	Bamford	1935	H	Medit.
atroviolaceus		90	,,	,,	H	Syr., Persia
segetum		120	,,	,,	H	Medit.
communis		90, 180	,,	1941	H	Europe
illyricus		90	,,	,,	H	,,
(v) *angustus*		30	,,	1935	H	S. Africa
brevifolius		30	,,	,,	H	,,
cuspidatus		30	,,	,,	H	,,
debilis		30	,,	,,	H	,,
gracilis		30	,,	,,	H	,,
grandis		30	,,	,,	H	,,
pappei		30	,,	,,	H	,,
recurvus		30	,,	,,	H	,,
tristis		30	,,	,,	H	,,
trochonemifolius		30	,,	,,	H	,,
(vi) *saundersii*		30, 45	,,	,,	H	,,
platyphyllus		60	,,	,,	H	,,
primulinus		60	,,	,,	H	,,
quartinianus		75	,,	,,	H	Abyss., *cult*
dracocephalus		75, 90	,,	,,	H	*cult*
psittacinus		75, 90	,,	,,	H	,,
colvillei		30, 45	,,	,,	H	,,
nanus		30, 45, 60	,,	,,	H	,,
maculatus		30	,,	1941	H	S. Africa
martleyi		30	,,	,,	H	,,
watermeyeri		30	,,	,,	H	,,
watsonius		30	,,	,,	H	,,
ROMULEA $x=15$?						
parviflora		*c.* 60	M. & S.	1935	H	S. Africa

310. ROXBURGHIACEAE

STEMONA						
tuberosa		—			R	Trop. Asia

311. DIOSCOREACEAE

DIOSCOREA $x=10$						
caucasica		20	B. W. Smith	1937	—	Caucasia
quinqueloba	Japanese Yam	20	,,	,,	R	Japan
gracillima		20	Nakajima	1933	—	,,
tokoro		20	,,	,,	—	,,
japonica		40	,,	,,	—	,,
discolor		40	,,	,,	H	S. America
macroura		40	B. W. Smith	1937	—	Trop. Africa

DIOSCOREA (*cont.*)					
sativa	Yam	60	Nakajima 1936	R	S.E. Asia, *cult*
villosa		60	B. W. Smith 1937	—	N. America
reticulata		61	„ „	—	Chile
fargesii		64	„ „	—	China
alata	White Yam	*c.* 81	Nakajima 1936	R	Trop. Asia
bulbifera	Air Yam	80	„ „	HR	„
cayennensis	Attoto Yam	*c.* 140	B. W. Smith 1937	R	Guiana, Brazil
oppositifolia	E. Indies Yam	*c.* 140	„ „	R	E. Indies
batatas	Chinese Yam	*c.* 144	„ „	R	China, *cult*
pentaphylla		*c.* 144	„ „	(R)V	Trop. Asia
anguina	Kakur Alu	—		R	Himalayas
esculenta	Lesser Yam	—		R	S.E. As., *cult*
glabra		—		R	Ind., Mal.
hispida	Esuri-yam	—		R	Trop. Afric
nummularia	Tivoli	—		R	Fiji
obcuneata		—		R	Ceylon
spicata		—		R	Ind., Indo-Chin
TAMUS $x=?$					
communis	Black Bryony	48	Meurman 1925	HM	Eur., Pers N. Africa
TESTUDINARIA					
elephantipes	Elephant's Foot	—		(R)	S. Africa

312. XANTHORRHOEACEAE

XANTHORRHOEA					
arborea	Gum Tree	—		(V)T	Australia
hastilis	Grass Tree	—		T	„

313. AGAVACEAE

DRACAENA (CORDYLINE) $x=19$					
arborea		38	McKelvey & S. 1933	T	Trop. Afri
draco	Dragon Tree	38	Bowden 1940a	HReT	Canary Is.
fragrans		38	Whitaker 1934a	T	Trop. Afri
		42	Guard & H. 1941		
terminalis (*spicata*)		38	D. Sato 1935b	HT	E. Indies
cannaefolia		114	„ „	T	Australia
congesta (*stricta*)		114	„ „	M	Austr., M
cinnabari	Dragon's Blood	—		DRc	Socotra
manni		—		TVC	Sierra Leo
DASYLIRION $x=19$					
longissimum		*c.* 38	Whitaker 1934a	H	Mexico
texanum		38	D. Sato 1935b	HV	Texas
wheeleri		38	„ „	H	Mexico

SANSEVIERIA $x=20, 21$					
zeylanica	Nagaset, Ceylon	40, 42	M. & S. 1935	HT	Ceylon
	Bowstring Hemp	42	E.K.J.		
roxburghiana	Indian B. H.	40	Patel & N. 1937	HT	India
cylindrica (*sulcata*)	Ife H.	102-104	Heitz 1926	HT	Trop. Africa
ehrenbergi	Seleb B. H.	—		T	Abys., E. Africa
longiflora	Florida B. H.	—		T	Trop. Africa
thyrsiflora	Konje H.	—		T	,, ,,
DORYANTHES $x=?$					
excelsa		48	D. Sato 1938	H	Australia
guilfoylei		48	,, ,,	H	,,
palmeri		48	,, ,,	H	,,
		36	Whitaker 1934a		
PHORMIUM $x=?$					
tenax	N.Z. Flax	—		HT	New Zeal.
cookianum	Flax Lily	—		HT	,,
CORDYLINE $x=30$					
australis		60	M. & S. 1935	H	New Zeal.
POLYANTHES (POLIANTHES) $x=30$					
tuberosa	Tuberose	60	D. Sato 1938	HP	Mex., *cult*
BESCHORNERIA $x=30$					
tubiflora		60	D. Sato 1938	H	Mexico
yuccoides		60	Koeperich 1930	H	Mexico
SAMUELA $x=30$					
faxoniana	Date Yucca	60	McKelvey & S. 1933	H	W. Texas
FURCRAEA (FOURCROYA) $x=30$					
gigantea	Mauritius H.	60	M. & S. 1935	HT	C. Amer.
pubescens		60	,, ,,	HT	Mexico
bedinghausii etc.		60	Whitaker 1934a	H	Mexico
AGAVE $x=30$					
stricta		50?	Vignoli 1936	T	Mexico
amaniensis		60	Doughty 1936	T	*cult*
angustifolia	Ketki	60	,, ,,	T	W. Indies
consociata		60	McKelvey & S. 1933	T	California
filifera		60	,, ,,	HT	Mexico
lespinassei		60	Doughty 1936	—	,,
lutea		60	D. Sato 1935b	—	*cult*
vivipara		60	,, ,,	T	W.I., Guiana
candelabrum		c. 90	Vignoli 1936	T	Mexico
cantula	Kantala	60, 90	Doughty 1936	T	,,
lurida		90	Vignoli 1936	T	,,
americana (& 30 spp.)	Century Pl.	60, 120, 180	Granick 1944	HT	Mex., Ariz.

AGAVE (*cont.*)					
zapupe		110	Doughty 1936	T	Mexico
salmiana (*atrovirens*)		120	Vignoli 1936	T	,,
sisalana	Sisal Hemp	138	Doughty 1936	T	,,
		141-150	D. Sato 1935b		,,
fourcroydes	Henequen	*c.* 140	Doughty 1936	T	Yucatan
ghiesbreghtii		180	Vignoli 1936	HT	Mexico
atrovirens		180	D. Sato 1938	T	,,
RUNYONIA $x=30$					
longiflora		60	Granick 1944	—	Mexico
MANFREDA (AGAVE) $x=30$					
virginica		60	McKelvey & S. 1933	T	S.E: U.S.A
YUCCA $x=30$					
aloifolia	Spanish Bayonet	60	Watkins 1936	H	Mex., W.I.
arkansana		60	,, ,,	H	S: C. U.S.A
glauca		60	,, ,,	(F)H	W: U.S.A.
louisianensis		60	,, ,,	H	N. America
radiosa		60	,, ,,	H	Mexico
recurvifolia (*pendula*)		60	,, ,,	HT	S.E: U.S.A
wrightii		60	M. & S. 1935	—	—
angustissima		60	McKelvey & S. 1933	—	W: U.S.A.
constricta		60	,, ,,	H	W. Texas
elata		60	,, ,,	H	Mexico
filamentosa	Adam's Needle	60	,, ,,	(F)H	S.E: U.S.
flaccida		60	,, ,,	H	,,
macrocarpa		60	,, ,,	H	Arizona
rupicola		60	,, ,,	H	Texas
HESPEROYUCCA (YUCCA) $x=30$					
whipplei		60	McKelvey & S. 1933	H	California
HESPERALOE $x=30$					
parviflora		60	McKelvey & S. 1933	H	California

314. PALMACEAE

NIPA $x=8$					
fruticans	Nipa Palm	16	Radermacher 1925	ASuT	Ind.—Aus
WASHINGTONIA (BRAHEA) $x=12$					
filifera	Skirt Palm	24	Nemec 1910	HSh	S.W: U.S.
CHAMAEDOREA $x=13$					
sartori		*c.* 12	Suessenguth 1920	HT	Mexico
corallina		*c.* 26	Söderberg 1919	HT	Venezuela
glaucifolia?		26	Suessenguth 1920	HT	Mexico
karwinskyana (*elatior*)		26	,, ,,	—	,,
elegans		26	E.K.J.	H	,,

ARENGA $x=13$					
pinnata (*saccharifera*)	Sugar Palm	26	E.K.J.	ASuT	Ind., Mal.
CALAMUS $x=14$					
caryotoides		28	E.K.J.	HT	Australia
rotang	Rattan, Cane P.	—		FT	India
scipionum	Malacca C.P.	—		TTo	Malaya
ARECA $x=16$					
triandra (*aliciae*)		*c.* 32	E.K.J.	HV	Mal., Anda.
catechu	Betel Nut	—		MToW	Trop. Asia (*cult*)
ARECASTRUM (COCOS) $x=16$					
romanzoffiana	Queen Palm	32	E.K.J.	HV	Tr.S.Am.
BUTIA (COCOS) $x=16$					
capitata	Yatay P.	32	E.K.J.	H	Brazil
COCOS $x=16$					
nucifera	Cocoanut	32 32	Santos 1928, E.K.J.	ABNO SuT ToW	Pacific, *cult*
ELAEIS $x=16$					
guineensis	Oil Palm	32	E.K.J.	OT	Trop. Africa
COPERNICA $x=18$					
cerifera	Carnauba Wax P.	36	E.K.J.	OT	W. Ind., Brazil
PHOENIX $x=18$					
canariensis		36	Beal 1937	FTW	Canary Is.
dactylifera	Date Palm	36	,, ,,	FTW	Pers., *cult*
farinifera		36	Patel & N. 1937	ASuT	India
humilis (*hanceana*)		36	Beal 1937	FHT	Ind., Bur., China
reclinata		36	,, ,,	AHT	Tr. & S. Afr.
sylvestris		36	,, ,,	ASuT	India
SABAL $x=18$					
palmetto		36	E.K.J.	HTW	N. America
causiarum	P.R. Hat P.			TW	Puerto Rico
THRINAX $x=18?$					
morrisii	Peaberry P.	*c.* 36	E.K.J.	H	W. Indies
TRACHYCARPUS (CHAMAEROPS) $x=18$					
fortunei (*excelsus*)	Windmill P.	36	Sinoto 1929b	HV	China
martianus		—		HF	Himalayas
ACANTHORHIZA					
aculeata		—		HF	Trinidad
ACROCOMIA					
lasiospatha	Macaw	—		HF	W. Indies, Brazil

ANCISTROPHYLLUM				
secundiflorum		—	V	Trop. Afr
ASTROCARYUM				
acaule		—	F	Brazil
murmura	Murmura	—	F	,,
ATTALEA				
funifera	Coquilla Nut	—	O	Brazil
BACTRIS				
utilis	Peach Nut	—	NT	Costa Ric
major	Cocorote Palm	—	AF	W. Indies
BORASSUS				
flabellifer	Palmyra Palm	—	ASuTV W	India
BRAHEA				
dulcis	Soyale Palm	—	FH	Peru
CARYOTA				
urens	Kitul	—	AHSuT	Trop. As
CEROXYLON				
andicola	Wax Palm	—	OT	Chile, Pe
CHAMAEROPS				
humilis	Fan Palm	—	HT	W. Medit
COELOCOCCUS (METROXYLON)				
amicarum	Ivory Nut P.	—	ToW	Sol. & Friendly
EUTERPE				
edulis	Assay P.	—	V	Trop. An
JESSENIA				
polycarpa		—	F	New Gra
JUBAEA				
spectabilis	Coquito	—	HNSu	Chile
LEOPOLDINA				
piassaba	Para Piassava	—	T	Brazil
LODOICEA				
sechellarum	Double Coconut	—	NToW	Seychelle
LIVISTONIA				
australis	Cabbage Palm	—	HV	Australia
MAURITIA				
flexuosa	Ita Palm	—	FSuTW	Trop. S.
METROXYLON				
laeve	Spineless Sago P.	—	StW	E. Indies
rumphii	Prickly S.P.	—	StW	,,
sagu	Sago Palm	—	StW	Molucca

OENOCARPUS					
bacaba	Bacaba Oil Palm	—		O	Guiana & Amaz.
batava	Batava Palm	—		O	Brazil
distichus	Bacaba Wine P.	—		FB	,,
ONCOSPERMA					
filamentosum	Nibung P.	—		V	Malay.
OREODOXA					
oleracea	Cabbage P.	—		V	W. Indies
PHYTELEPHAS					
macrocarpa	Tagua, Ivory Nut P.	—		ToW	Trop. Amer.
PRITCHARDIA					
filifera		—		HF	S: N. Amer.
RAPHIA					
pedunculata	Raffia P.	—		HT	Madagascar
vinifera	Lagos Bast P.	—		AT	Trop. Africa

315. PANDANACEAE

PANDANUS					
tectorius	Keora Oil Pl.	—		TOPV	Mal., Pac., Tr. Austr.
candelabrum	Screw Pine	—		T	W. Africa

316. CYCLANTHACEAE

CARLUDOVICA $x=8, 9$					
insignis	Panama-hat Pl.	32	E.K.J.	H	Trop. Am., W. Indies
palmata		18	,,	HT	S. America

317. HAEMODORACEAE

ANIGOZANTHUS $x=6$					
flavidus		12	Stenar 1927	H	Australia

318. HYPOXIDACEAE

CURCULIGO $x=?$					
recurvata		18	D. Sato 1938	H	Trop. Asia, Australia
orchioides		c. 50	,, ,,	HM(R)	Trop. Asia

321. TACCACEAE

TACCA					
integrifolia	Sandwich Is. A.	—		R	Pacific Is.
pinnatifida	Fiji Arrowroot	—		R	O.W. Trop.

326. ORCHIDACEAE

VANDA $x=9$					
tricolor		18, 36	Hoffmann 1930	H	Java
ANACAMPTIS $x=9$					
pyramidalis		36	Barber 1942	H	Eur, N. Af., S.W. Asia
CYPRIPEDIUM $x=10, 11, 13, 15$					
acaule		20	Belling 1926	H	N. America
spectabile		22	Hoffmann 1930		”
as *hirsutum*		20	Humphrey 1934		
calceolus	Lady's Slipper	22	Francini 1931	H	Eurasia
as *pubescens*		20	Belling 1926		N. America
villosum (*speciosum*)		26	Francini 1931	H	Burma
spicerianum		30	” ”	H	Himalayas
THELYMITRA $x=13$					
longifolia		26	Hair 1942	—	New Zealan
ONCIDIUM $x=14$					
bicallosum		28	Hoffmann 1930	H	Guatemala
flexuosum		28	” ”	H	Brazil
varicosum		56	” ”	H	”
GOODYERA $x=15$					
repens		30	Richardson 1935	H	N. Temp.
LIPARIS $x=16, 21$					
loeselii		32	Miduno 1940	H	N. Temp.
nervosa		42	” ”	—	Jap., China
VANILLA $x=16$					
planifolia	Vanilla	32	Hoffmann 1930	P	W. Indies
pompona	W. India V.	—		P	C. America
PAPHIOPEDILUM $x=16$					
chamberlainianum		32	Hoffmann 1930	H	Sumatra
insigne		32	” ”	H	Himalayas
purpuratum		c. 48	” ”	H	Hongkong
STELIS $x=16$					
atropurpurea etc.		32	Hoffmann 1930	—	Mexico
BLETILLA (BLETIA) $x=16, 18$					
striata (*hyacinthina*)		32	Miduno 1940	H	China, Jap.
formosana		36	” ”	—	Formosa?
EPIPACTIS $x=16, 19, 20$					
shizuoi		32	Miduno 1938	—	Japan
latifolia	Helleborine	38	Barber 1942	—	Europe
thunbergii		40	Miduno 1938	—	Japan
LISTERA $x=17, 18, 19, 21$					
ovata	Twayblade	34, 35, 36	Richardson 1933	—	Eur., N. A
		34+1f	MacMahon 1936		
cordata		42	Blackburn, T. 1936	—	N. Europe
		38	S. & S. 1940	—	Caucasus
CEPHALANTHERA $x=17, 18$					
falcata		34	Miduno 1938	H	Japan
grandiflora	Helleborine	36	Barber 1942		Europe

SARCANTHUS $x=18$					
rostratus		36	Hoffmann 1930	H	China
ASCOTAINIA (TAINIA) $x=18$					
laxiflora		36	Miduno 1940	H	Liukiu Is.
OPHRYS $x=18$					
apifera	Bee Orchis	36	Barber 1942	—	Europe
muscifera	Fly Orchis	36	„ „	—	„
ORCHIS $x=18, 20, 21$					
morio		36	Hagerup 1938	—	Eur.
maculata	Spotted O.	40, 80	„ „	H	Eur., A. M.
latifolia	Marsh O.	40, 80	M. 1939	—	„
incarnata		40	Hagerup 1938	—	„
mascula	Early Purple O.	42	„ „	H	„
militaris		42	„ „	H	„
purpurea		42	„ „	—	Eur., A. Min.
sambucina		42	„ „	—	Europe
ustulata		42	„ „	—	„
fauriei		42	M. & S. 1935	—	Japan
rotundifolia		42	Humphrey 1932	H	Queb.—Mt.
spectabilis		42	„ „	H	„
elodes (incarnata)		79, 80	M. 1939	—	Eur.—Pers.
praetermissa		80, 82	„ „	—	England
purpurella		80	„ „	—	Britain
caucasica		80	S. & S. 1940	—	Caucasus
AERIDES $x=19$					
japonicum		38	Sugiura 1936a	H	Japan
NIGRITELLA $x=19$					
nigra		38, c. 60	T. 1931	—	Eur. Mts.
DENDROBIUM $x=19, 20$					
monile (catenatum)		38	Miduno 1940	H	Japan
nobile		38	Hoffmann 1930	H	Him., China
chrysoloxum etc.		40	„ „	H	Burma
CALANTHE $x=20$					
discolor		40	Morinaga *et al.* 1931	H	Japan
kirishiminensis		40	Miduno 1940	—	„
reflexa		40	„ „	—	„
striata, torifera, furcata		40	„ „	—	„
CYMBIDIUM $x=20$					
lowianum (giganteum)		40	Hoffmann 1930	H	Himalayas
sinense		40	Sugiura 1936a	H	China
COELOGYNE $x=20$					
fimbriata		40	Hoffmann 1930	H	Himalayas
flexuosa		40	„ „	H	—
fuliginosa		40	„ „	H	Himalayas
DENDROCHILUM (PLATYCLINIS) $x=20$					
glumaceum		40	Hoffmann 1930	H	Philip. Is.

EPIDENDRUM *x*=20					
nocturnum		40	Hoffman 1930	H	Trop. Amer
ramiferum		40	” ”	H	Mexico
CATTLEYA *x*=20					
trianei		40	Hoffmann 1930	H	Chile, Peru
GONGORA *x*=20					
galeata		40	Hoffmann 1930	H	Mexico
LUISIA *x*=20					
boninensis		40	Miduno 1940	—	Bonin Is.
PLEIONE *x*=20					
formosana		40	Miduno 1940	H	Formosa
STANHOPEA *x*=20					
insignis		40	Hoffmann 1930	H	Brazil
tigrina		40	” ”	H	Mexico
ZYGOPETALUM *x*=20 [Apomixis]					
mackaii		40	Hoffmann 1930	H	Brazil
ACERAS *x*=21					
anthropophora	Man Orchis	42	Barber 1942	H	Europe
CORALLORHIZA *x*=21					
innata		42	Miduno 1940	H	Eur., N. Am
HABENARIA *x*=14, 20, 21					
oldhami		28	Miduno 1940	H	Japan
conopsea	Fragrant O.	40	F.-Leliveld 1941	H	Eur., N. As.
dilatata	Bog Orchis	42	Humphrey 1934	H	N. America
as *Gymnadenia chidori*		42	Miduno 1940	H	Japan
as *Platanthera hologlottis*		42	” ”	H	N. China
as *Pecteilis radiata*		48	” ”	H	Japan
ORNITHIDIUM *x*=24?					
densum		*c.* 48	Hoffmann 1930	H	Mexico

327. JUNCACEAE

LUZULA *x*=6					
silvatica	Wood Rush	12	Wulff 1939c	—	Europe
campestris		*c.* 18	Brenner 1922	—	Eur., Amer
		36	Löve & L. 1944		Aust.
spicata		24	Böcher 1938a	—	Eur., N. An
multiflora		12, 36	Scheerer 1940	—	Europe
frigida		36	Hagerup 1941	—	”
sudetica etc.		36	Löve & L. 1944	—	Arctic
OXYCHLOË *x*=8					
andina		16	Sasaki 1937	—	S. America

JUNCUS $x=8, 10$					
macer (tenuis)		32	Sasaki 1937	T	Eur., W. In.
prominens		c. 64	” ”	—	—
bulbosus (supinus)		40	Wulff 1938	—	E:N. Amer.
effusus	Rush	40	Scheerer 1940	HT	Cosmop.
maritimus	Juncio	c. 40	Wulff 1937a	T	” Temp.
lamprocarpus		c. 60	” ”	T	” ”
filiformis		c. 80	” ”	T	N. Temp.
gerardi (bottnicus)		80	” ”	T	”
ranarius		c. 120	” ”	T	Cosmop.
arcticus		c. 100	Löve & L. 1944	—	N. Europe

331. CYPERACEAE

FIMBRISTYLIS $x=5$					
sub-bispicata		10	Tanaka 1937	Fo	Trop. Asia
HELEOCHARIS (ELEOCHARIS) $x=5, 8, 9$					
parvulus		10	Wulff 1937a	—	Eur., N. Am.
japonica		20	Tanaka 1937	—	Japan
tuberculosa		30?	Hicks 1929	—	N. America
palustris		10, 16	Lewitzky, T. 1936	—	Eur., N. Am.
		c. 36?	Hicks 1929		
acicularis		20	Tanaka 1937	—	N. Hemisp.
		c. 56?	Hicks 1929		
tuberosa	Pi-tsi	—		R	E. Indies
CAREX $x=6, 7, 8, 9$					
siderostricta		12, 24	Tanaka 1940	—	China
grallatoria etc.		18	Nakajima 1937b	—	Kiu-Siu Is.
ericetorum		30	Heilborn 1939	—	Eur., Temp. Asia
panicea		32	” ”	—	N. Temp.
pilosa		32, 57	Okuno 1940	—	Italy
conica		34, 38, 42	” ”	—	Japan
parallela (dioica)		44	L. & L. 1942	—	North Reg.
davalliana		46	Heilborn 1939	—	N. Temp.
tomentosa		48	” ”	—	Europe
capitata		50	” ”	—	Eur., N. Am.
canescens		54, 56	L. & L. 1942	—	N. & S. T.
tenuiflora		58, 62	” ”	—	N. Temp.
leporina		66, 68	” ”	—	Eur., N. Am.
rostrata		76, 82	” ”	—	—
myabei		90	Okuno 1940	—	Japan
adelostoma		106	L. & L. 1942	—	O.W. Arct.
hirta		112	Heilborn 1939	—	Eur., Temp. Asia
145 species	Sedges	30-112	” ”	—	Old World
107 species	”	26-112	Wahl 1940	—	America
CYPERUS $x=8, 9$					
alternifolius	Umbrella Pl.	32	Tanaka 1937	HT	Madagascar
hakonensis		36	” ”	T	Japan

CYPERUS (*cont.*)					
sanguinolentus		48	Tanaka 1937	T	Tropics
papyrus	Papyrus Gr.	c. 102	,, ,,	HT	Trop. Afr.
esculentus	Tiger Nut, Chufa	108?	Hicks 1929	BR	Cosmop.
as *rotundus*		108	Tanaka 1937		
procerus		—		T	India, Egyp
bulbosus		—		R	India, Afr.
corymbosus	Malabar Mat Gr.	—		T	S. India
tigetum	Calcutta Mat Gr.	—		T	Ind., Trop. Afr.
SCIRPUS $x=8$, etc.					
palustris	Sedge	16, 38	Håkansson 1929b	—	Cosmop.
		42	Kostrionkoff 1930		
lacustris		38, 40, 42	Tanaka 1938	—	,,
mucronatus		42	,, 1937	—	,,
radicans		58	Heilborn 1939	—	,,
maritimus		86	Blackburn, T. 1936	T	,,
		c. 104	Håkansson 1928		
		110	Tanaka 1937		
DULICHIUM $x=15$					
arundinaceum		32	Hicks 1929	—	N. America
LIPOCARPHA $x=23$					
microcephala		46	Tanaka 1937	—	E.As., Austr
ERIOPHORUM $x=29$					
polystachyum	Cotton Grass	58	Håkansson 1928	HT	N. Temp., Arctic
vaginatum		58	,, ,,	H	N. America
virginianum		58?	Hicks 1929	—	,,
BULBOSTYLIS $x=42$					
capillaris		84	Tanaka 1937	T	N. America
KOBRESIA					
bellardii		—		Fo	Eur., Asia, N. Amer.
KYLLINGA					
erecta		—		T	Tropics
pumila		—		T	,,
elatior		—		T	S. Africa
MARICUS					
umbellatus		—		TMR	W. Africa
REMIRIA					
maritima		—		Sb	Tropics

332. GRAMINEAE

Order of the Tribes with their Basic Numbers

I Maydeae : 5, 9 (10)
II Andropogoneae : 5, 9 (10) 12
III Paniceae : 7, 9, 10 (12) (15) 17
IV Eragrosteae : 9, 10, 12
V Sporoboleae : 9, 10 (12) (21)
VI Zoisieae : 20
VII Chlorideae : 7, 9, 10
VIII Pappophoreae : 10
IX Aristideae : 11
X Leptureae : 7, 13
XI Nardeae : 13
XII Lygeeae : 20
XIII Agrosteae : 7
XIV Phalarideae : 5, 6, 7
XV Festuceae : 5, 6, 7, 9, 11
XVI Aveneae : 6, 7, 9
XVII Hordeeae : 7
XVIII Stipeae : 9, 10, 11, 12, 14
XIX Oryzeae : 12, 15, 17
XX Arundineae : 12
XXI Centotheceae : 12
XXII Bambuseae : 12 (no 2*x*)

TRIBE I : MAYDEAE

COIX $x=5$					
aquatica	Bead Coix	10	Mangelsdorf & R. 1939, E.K.J.	FoTo	Trop. Asia
lacryma-jobi	Job's Tears	20	Longley 1924c		*cult*, Mal.
v. "*adlai*"	Adlay	20	E.K.J.	FoGH	
v. *mayuen*, v. *stenocarpa*		20	Mangelsdorf & R. 1939	FoGTo	
gigantea	Giant Coix	20, 40	E.K.J.	FoTo	Trop. Asia
CHIONACHNE (POLYTOCA) $x=5$ (10)					
koenigii		20	E.K.J.	Fo	Trop. Asia
as *barbata*		20	Mangelsdorf & R. 1939		
semiteres		20	E.K.J.	Fo	„
SCLERACHNE $x=5$ (10)					
punctata		20	Mangelsdorf & R. 1939	Fo	Java
POLYTOCA $x=5$ (10)					
macrophylla		40	Avdulov 1931	Fo	New Guinea, etc.
EUCHLAENA $x=5$ (10)					
mexicana	Teosinte	20	Longley 1937	FoG	Mexico
perennis	Perennial T.	40	„ „	Fo	„
ZEA $x=5$ (10)					
mays	Maize	20+1-7f	Randolph 1928	GFoOV	Mex., *cult*
	Indian Corn	20+1-7f	Darlington & U. 1941		
		(10, 40, 80)	Randolph 1932		
		(30)	Beadle 1930		
TRIPSACUM $x=9$					
floridanum	Florida Gama	36	Longley 1937	Fo	Florida
dactyloides	Eastern G.	36, 72	Mangelsdorf & R. 1939	Fo(G)	Trop & Sub-trop. Amer.

TRIPSACUM (*cont.*)					
latifolium		72	Mangelsdorf & R. 1939	Fo	C. America
laxum		72	" "	Fo	"
pilosum	Guatemala G.	72	" "	Fo	"

TRIBE II: ANDROPOGONEAE

SORGHUM *x*=5					
dimidiatum		10	Janaki Ammal 1939	Fo	Sudan
versicolor		10	Longley 1932	Fo	E. Trop. Africa
purpureo-sericeum		10+1-6f	Janaki Ammal 1940b	Fo	N. Trop. Africa
		10+1-6f	Darlington & T. 1942		
arundinaceum		20	Longley 1932	Fo	Trop. Afric
cernuum	White Durra	20	Huskins & S. 1934	GFo	*cult*
dochna	Sorgo, Sugar S.	20	" "	SuG	"
drummondii	Chicken-Corn	20	Karper & C. 1936	Fo	"
durra	Cholam	20	Huskins & S. 1932	GFo	"
effusum (*arundinaceum*)	Kamerun G.	20	Karper & C. 1936	Fo	Trop. Afric
hewisonii		20	" "	Fo	Sudan
margaritiferum		20	Huskins & S. 1934	GFo	*cult*
melaleucum	Shelsheleih	20	" "	GFo	Sudan, *cult*
roxburghii	Shallu	20	E.K.J.	GFo	*cult*
stapfii		20	Krishnaswamy *et al.* 1940	Fo	India
subglabrescens	Milo	20	Huskins & S. 1934	GFo	*cult*
sudanense	Sudan Grass	20	" "	Fo	Sudan
		(40)	Salomon 1940		
verticilliflorum	Wild S. Tabuki	20+f	Huskins & S. 1934	Fo	Trop. Afric
virgatum	Tunis G.	20	" "	Fo	N. Africa
vulgare	Great Millet	20	Kuwada 1915	GFoSu	*cult*, Abys.
halepense	Johnson G.	20, 40	E.K.J.	Fo	Trop. Asia, Med.
		40	Huskins & S. 1934		
almum		40	Parodi 1943	Fo	Argentine
HYPARRHENIA *x*=5					
hirta		30	Garber 1944	Fo	Trop. Afri
CAPILLIPEDIUM (ANDROPOGON) *x*=5 (10)					
parviflorum as *A. micranthus*	Scented Golden-beard	20	Church 1940	Fo	O.W. Tro
HETEROPOGON *x*=5 (10)					
contortus	Spear Grass	20	E.K.J.	FoT	Tropics
POGONATHERUM *x*=5 (10)					
paniceum		20	E.K.J.	H	Trop. Asia

VETIVERIA *x*=5 (10)					
lawsoni		20	E.K.J.	T	India
zizanioides	Kus Kus G.	20	”	HPT	Trop. Asia
nigritana		—		T	Trop. Africa
THEMEDA *x*=5 (10)					
arguens		20	Avdulov 1928	Fo	Mal.—Austr.
triandra (*forskalii*)	Rooi G.	60	” 1931	Fo	Africa
ANDROPOGON *x*=5 (10)					
elliottii	Elliot Beard G.	20	Hunter 1934	Fo	N. America
virginicus	Broom Sedge	20	Church 1936	Fo	C. Am., U.S.A.
distachyum		40	Saura 1943	Fo	Argentine?
scoparius	Bluejoint T. F.	40	Hunter 1934	Fo	N. America
provincialis	Prairie B. G.	40, 60	Church 1940	Fo	”
hallii	Turkey Foot	60	” ”	Fo	”
ternarius		60	” ”	Fo	”
perforatus		80	” ”	Fo	”
gayanus	Gamba	—		Fo	Trop. Africa
CHRYSOPOGON (ANDROPOGON) *x*=5 (10)					
aciculatus	Love G.	20	E.K.J.	FoH	Trop. Asia
montanus		20	”	Fo	” ”
zeylanicus		20	”	T	India
gryllus		40	Avdulov 1931	Fo	Med.
CYMBOPOGON *x*=5 (10)					
caesius		20 22	E.K.J. Babu 1936	P P	India
nardus	Citronella G.	20	Kuwada 1919	HMPSp	Trop. Asia
polyneurus	Camphor G.	20	Babu 1936	P	India
flexuosus	Malabar L. G.	20, 40	” ”	MP	”
coloratus	Myet-Sat	40	” ”	P	Burma
martinii	Palmarosa, Ginger G.	40	” ”	P	India
citratus	Lemon G.	40, 60	” ”	HMP	Trop. Asia
schoenanthus	Camel Hay	—		HFo	S.W. Asia, N. Africa
DICHANTHIUM *x*=5 (10)					
annulatum	Marvel G.	40 40	Karper & C. 1936, E.K.J.	Fo	N. & Trop. Africa & Trop. Asia
caricosum		50?	Krishnaswamy 1940	Fo	Trop. Asia
EREMOPOGON (ANDROPOGON) *x*=5 (10)					
foveolatus		40 45?	E.K.J. Krishnaswamy 1940	Fo	N. Africa, Trop. Asia
EUCLASTA (ANDROPOGON) *x*=5 (10)					
condylotricha (*piptatherus*)		40	Avdulov 1931	Fo	Trop. Africa & America

SORGHASTRUM $x=5$ (10)					
nutans	Indian G.	40	Church 1929b	Fo	E: U.S.A.
BOTHRIOCHLOA (ANDROPOGON) $x=5$ (10)					
intermedia		60	Avdulov 1931	Fo	Trop. As. & Australia
saccharoides	Silver Beard G.	60	,, ,,	Fo	Temp. & Trop. Am.
		100	Church 1940		
APLUDA $x=5$ (10)					
mutica		20	Hunter 1934	Fo	Trop. Asia
		40	Avdulov 1928		
ISCHAEMUM (ANDROPOGON) $x=5$ (10)					
guianense		40	Krishnaswamy '40	Fo	Trop. Amer
anthephoroides		68	Kuwada 1919	Fo	Japan
NARENGA (SACCHARUM) $x=5$					
porphyrocoma		30	Janaki Ammal 1941	T	India, Mal
as *S. narenga*		30	Bremer 1924		
IMPERATA $x=5$ (10)					
cylindrica	Alang Alang	20	Janaki Ammal 1941	FoT	Trop. & Subtr.O.W
as *arundinacea*	Blady G., Cogon G.	20	Bremer 1924		
ERIANTHUS (SACCHARUM) $x=5$ (10)					
ravennae	Plume G.	20, 20+f	Janaki Ammal 1941	HT	Med., S.W. Asia
elegans		40	Bremer 1924	T	India
arundinaceus		40, 60	,, 1934	HT	Ind., China
		40	Janaki Ammal 1941		
sara (bengalense)		60	Rümke 1934	T	India, Afgh.
SACCHARUM $x=10, 12$					
arundinaceum		40	E.K.J.	T	India, China
		40, 60	Bremer 1934		
spontaneum	Kans G.	54-128	Singh 1934	T	Polyn.—Turkest.
		48, 56, 64, 72, 80	Janaki Ammal 1936		
		96, 112	Bremer 1934		
officinarum	Sugar Cane	80	,, 1923	Su	*cult*, E. Ind.
off.×*spontaneum* etc.		80-156	,, ,,		
robustum		60, 80, 84, 96, 144	Weller 1939		Mal. & Poly
barberi		82, 90, 91, 116, 124	Bremer 1931	Su	*cult*, India
biflorum		112	,, ,,	—	?
sinense		118-120	,, ,,	Su	*cult*, China
SCLEROSTACHYA $x=12$					
fusca	Yekkda	48, 96	Janaki Ammal 1940a	T	Ind., Burma
MISCANTHUS $x=?$					
chinensis		42	Church 1929b	HT	E. Asia
japonicus		38	Bremer 1934	HT	E. Asia, Polyn.
		36	Avdulov 1931		
saccharifera		64	Hunter 1934	H	E. Asia

ROTTBOELLIA (MANISURIS) $x=9$					
cylindrica		18	Mangelsdorf & R. 1938	Fo	N. America
exaltata		—		Fo	Trop. Afr. & Asia
COELORRHACHIS (ROTTBOELLIA) $x=9$					
glandulosa		54	Avdulov 1931	Fo	Trop. Asia
ARTHRAXON $x=9$					
langsdorffi (ciliaris)		36	Avdulov 1931	Fo	O.W. Tropics

TRIBE III : PANICEAE

PENNISETUM (PENICILLARIA) $x=7, 9$					
$x=7$					
spicatum	Pearl Millet, Bajra	14	Avdulov 1931	Fo	Tropics
typhoides (glaucum)	Spiked Millet	14 (21)	Krishnaswamy & A. 1941	FoG	Trop. Afr., Asia
		14	Karper & C. 1936		
purpureum	Elephant G.	28	Burton 1942	FoT	Trop. Africa
$x=9$					
hohenackeri		18	E.K.J.	Fo	India
setaceum (ruppellii)	Fountain G.	27	Avdulov 1931	FoH	N. Afr., S.W Asia
clandestinum	Kikuyu G.	36	La Cour 1931	Fo	E. Africa
orientale		36	Avdulov 1928	Fo	Alg.—India
v. *triflorum*		45	Krishnaswamy 1940		India
villosum (longistylum)	Feathertop	45	Avdulov 1931	FoH	N.E. Trop. Africa
		45	Krishnaswamy 1940		
macrourum		45	Advulov 1931	Fo	S. Africa
setosum		54	,, ,,	Fo	Trop. Amer.
ANTHEPHORA $x=9$					
hermaphrodita		18	Avdulov 1928	Fo	Trop. Amer.
SPINIFEX $x=9$					
littoreus	Spiny Rolling G.	18	E.K.J.	Sb	India—Mal.
BRACHIARIA (PANICUM) $x=9$					
eruciformis		18	Avdulov 1931, E.K.J.	Fo	Trop. Afr. & Asia
distachya		36	Krishnaswamy 1940	Fo	Trop. Asia, Austr.
mutica	Para G.	36	Hunter 1934	Fo	Trop. Afr., & Am.
	Giant Couch	36	Burton 1942		
paspaloides		36	E.K.J.	Fo	Trop. Asia
brizantha	Large-seeded P.	—		Fo	Trop. & S. Africa
serrata		—		Fo	S. Africa

SETARIA (CHAETOCHLOA) x=9					
italica	Italian Millet	18	Avdulov 1928	G	*cult*, China
viridis	Green Bristle G.	18	Krishnaswamy *et al.* 1935b	Fo	Cosmop.
pallidefusca (*glauca*)	Kavatta G.	18	,, ,,	Fo	O.W. Trop.
faberi		36	Kishimoto 1938	—	China
glauca (*lutescens*)	Yellow B. G.	36	Avdulov 1931	Fo	Eur., Temp Asia
verticillata	Bur B. G.	18	Krishnaswamy *et al.* 1935b	Fo	Cosmop.
		36	Avdulov 1931		
plicata		36	,, 1928	Fo	Trop. Asia
geniculata		72	Kishimoto 1938	—	America
TRICHACHNE (PANICUM) x=9					
californica		18	Krishnaswamy 1940	Fo	N. America
PANICUM x=9					
antidotale		18	Burton 1942	Fo	Trop. Asia
arenicoloides		18	,, ,,	Fo	N. America
capillare		18	Avdulov 1928	Fo	N. & S. Am
commutatum		18	Burton 1942	Fo	N. America
scribnerianum		18	Church 1929	Fo	,,
sphaerocarpon		18	,, ,,	Fo	,,
subvillosum		18	,, ,,	Fo	,,
tsugetorum		18	,, ,,	Fo	,,
tuberculatum		18	,, ,,	Fo	Trop. Asia
anceps		18	Nielsen 1939	Fo	N. America
		36	Burton 1942		
bisulcatum (*acroanthum*)		36	Avdulov 1931	Fo	E. Asia
fasciculatum	Browntop M.	36	Burton 1942	Fo	Trop. Amer
maximum	Guinea G.	36	Burton 1942, E.K.J.	Fo	Trop. Afric
miliaceum	Indian Millet	36	Avdulov 1931	G	*cult*, India
	Proso M.	(72)	Arenkova 1940	Fo	
miliare	Little M. Shamay	36	Rau 1929a	FoG	Trop. Asia
texanum	Texas M.	54	Burton 1942	Fo	Temp. Am
virgatum	Switch G.	72	,, ,,	Fo	N. & C. Am
trichocladum	Ukuka	—		Fo	Trop. E. Afr
MELINIS x=9					
minutiflora	Molasses G. Efwatakala G.	36	Avdulov 1931	Fo	Trop. Afr. America
PASPALIDIUM (PANICUM) x=9					
paludivagum		36	Burton 1942	Fo	E. U.S.A.
jubiflorum		54	,, ,,	Fo	Australia
RHYNCHELYTRUM (TRICHOLAENA) x=9					
repens (*rosea*)	Natal G.	36	Avdulov 1931	FoH	Trop. Afric

ECHINOCHLOA (PANICUM)		$x=9$			
frumentacea	Jap. Barnyard M.	36	Hunter 1934	GFo	Trop. Asia
		56	Church 1929b		
crusgalli	Cockspur G.	42	” ”	GFo	Eur., Asia & N. Amer.
		48	Rau 1929		
		54	Avdulov 1928		
colonum	Jungle Rice, Shama Millet	72	E.K.J.	GFo	Trop. & Sub-Trop.
ERIOCHLOA $x=9$					
villosa		54	Avdulov 1928	Fo	E. Asia
polystachya	Carib G.	—		Fo	W. Indies
sub-glabra	Malojilla	—		Fo	Trop. Amer.
OPLISMENUS $x=9$					
undulatifolius		54	Avdulov 1931	—	S. Eur.—E. Asia
compositus	Basket Grass	72	” ”	H	Tropics
as *burmannii*		72	” ”		
hirtellus		—		H	Trop. Afr. & Amer.
DIGITARIA (PANICUM)	$x=9, 15, 17$				
didactyla	Blue Couch	18	E.K.J.	Fo	Mauritius, Austr.
valida		24?	Young & C. 1933	Fo	S. Africa
horizontalis		36	Avdulov 1928	Fo	Tropics
pentzii		36	Burton 1942	Fo	S. Africa
sanguinalis	Crab Grass	36	Avdulov 1931	FoG	Sub-Trop.
		36	Burton 1942		
exilis	Fundi	54	Hunter 1934	FoG	W. Africa
timorensis		72	E.K.J.	Fo	Trop. Asia
decumbens		30	Burton 1942	Fo	S. Africa
polevansii		34	” ”	Fo	”
eriantha	Woolly Finger-G.	—		Fo	”
iburua	Hungry Rice	—		GFo	W. Trop. Africa
CENCHRUS $x=17$					
ciliaris		34	E.K.J.	Fo	Trop. & S. Africa, Ind.
echinatus	Hedgehog G.	34	Avdulov 1931	Fo	Trop. Amer.
brownii (*inflexus*)		34	” ”	Fo	Australia, Trop. Am
setigerus	Anjan G.	34	E.K.J.	Fo	N.E. Trop. Afr.—India
tribuloides	Sand Bur	34	Avdulov 1931	Sb	N. America
myosuroides		70	” ”	Sb	Trop. Amer.
PASPALUM $x=10, 12$					
ciliifolium		20	Burton 1940	Fo	N. America
gayanum		20	Saura 1943	Fo	Argentine
haumanii		20	” 1941	Fo	Argentine
paniculatum		20	Burton 1940	Fo	Tr.Am. &Af.
supinum		20	” 1942	Fo	N. America

PASPALUM (*cont.*)					
racemosum (*stoloniferum*)		20+1-3f	Avdulov & T. 1933	FoH	Peru, Ec.
dissectum (*membranaceum*)		25?	Krishnaswamy 1940	Fo	N. Trop. Amer.
quadrifarium		20	Saura 1941	Fo	Argentine
		30	Burton 1942		
		60	Krishnaswamy 1940		
boscianum		40	Burton 1940	Fo	N. & S. Am
commune		40	Saura 1941		—
conjugatum	Sour G.	40	E.K.J.	Fo	Tropics
cromyorrhizon		40	Saura 1941	Fo	Trop. Amer
hieronymi		40	„ „	Fo	Argentine
intermedium		40	Burton 1942	Fo	Patagonia
lanceolatum		40	Krishnaswamy '40	—	—
longifolium		40	E.K.J.	Fo	Trop. Asia & Australi
malacophyllum		40	Burton 1940	Fo	Brazil
notatum	Bahia G.	40	„ „	Fo	Trop. Amer
plicatum		40	Saura 1941	Fo	N. America
proliferum		40	„ 1943	Fo	Argentine
scrobiculatum	Koda M.	40	Avdulov 1928	G	*cult*, India
simplex		40	Saura 1941	Fo	Patagonia
unispicatum		40	„ „	Fo	America
dilatatum	Large Water G.	40	Burton 1940	FoH	S. America
	Dallis G.	50?	Krishnaswamy 1940		
urvillei (*larranagai*)	Vasey G.	40	Burton 1940, Nielsen 1939		N. America
lentiferum		45?	Krishnaswamy '40	Fo	Mexico
tenellum		55	„ „	Fo	—
langei		60	Burton 1942	Fo	N. America
longipilium		60	„ „	Fo	„
epile		80	Saura 1941	Fo	„
virgatum	Cortadero	80	Avdulov 1931	Fo	S. America
giganteum		120	Burton 1942	Fo	N. America
floridanum		160	„ „	Fo	„
almum	Coomb's Pasp.	24	„ „	Fo	N. & S. Am
distichum	Knot G., Water Couch	48	„ „	Fo	Sub-Trop.
		60	Saura 1941		
AXONOPUS $x=10$					
compressus	Carpet G.	40	E.K.J.	Fo	Trop. Am. & Africa
affinis		80	Burton 1942	Fo	S. U.S.A.

TRIBE IV: ERAGROSTEAE

ELEUSINE $x=9$					
indica	Goose Grass	18	Avdulov 1931	Fo	Trop., Sub.-Trop.
		18	E.K.J.		

ELEUSINE (*cont.*)					
tristachya		18	Avdulov 1928	Fo	S. America
oligostachya		18	Krishnaswamy 1940	Fo	Brazil
coracana	Ragi, Finger Millet	36	Avdulov 1931	FoG	*cult*, Abys.
v. *tocussa*		39?	Krishnaswamy 1940		
lagopoides (*brevifolia*)		36	Krishnaswamy *et al.* 1935c	Fo	India
compressa (*flagellifera*)		45	Krishnaswamy 1940	Fo	W. As., Trop. Afr.
AELUROPUS $x=10$					
littoralis		20	Avdulov 1933	Sb	Medit.
LEPTOCHLOA $x=10$					
obtusiflora		20	E.K.J.	Fo	E. Afr., India
neesii (*polystachya*)		20	Avdulov 1928	Fo	Australia
chinensis		40	„ „	Fo	Trop. Asia
ERAGROSTIS $x=10$					
aspera		20	Avdulov 1931	Fo	Trop. & S. Afr., Ind.
cilianensis (*megastachya*)	Sterile Grass	20	„ 1928	Fo	Trop., Sub-Trop.
japonica		20	„ „	Fo	Trop. Asia, Austr.
bifaria		40	E.K.J.	Fo	Trop. Asia
brownii		40	„	Fo	Trop. Asia, Austr.
capensis		40	Avdulov 1928	Fo	S. Africa
chariis (*gangetica*)		40	E.K.J.	Fo	Trop. Afr.—Asia
tef (*abyssinica*)	Teff Grass	40	Avdulov 1928	FoG	*cult*, Abys.
mexicana		60	„ „	Fo	N. America
linearis (*pallescens*)		80	Hagerup 1932	Fo	W. Africa
CLEISTOGENES (DIPLACHNE) $x=10$					
serotina		40	Avdulov 1931	—	S. Eur.—C. Asia
DACTYLOCTENIUM (ELEUSINE) $x=12$					
aegyptium	Crowfoot G.	48	Avdulov, 1931, E.K.J.	Fo	Trop., Sub-Trop.
		34?	Krishnaswamy *et al.* 1935c		
scindicum		48	Krishnaswamy *et al.* 1940	Fo	India

TRIBE V: SPOROBOLEAE

CRYPSIS (HELEOCHLOA) $x=9$					
schoenoides		36	Avdulov 1931	Fo	Medit., Temp. A
SPOROBOLUS $x=9, 10$ (12)					
indicus		18, 36	Avdulov 1931	Fo	Tropics
diander		36	,, 1928	Fo	Trop. Asia Australia
poiretii (*berteroanus*)	Smut Grass	36	,, 1931	Fo	Trop. Ame
airoides	Alkali Dropseed	126	Stebbins & L. 1941	Fo	W:N. Ame
tremulus		20	E.K.J.	Fo	E. Asia
tenuissimus		40	Hunter 1934	Fo	Tropics
wallichii		24	E.K.J.	Fo	Trop. Asia
MUHLENBERGIA $x=10$ (21)					
mexicana	Wire-Stem M.	40	Avdulov 1931	—	N. America
racemosa (*glomerata*)	Marsh Muhly	40	,, ,,	Fo	,,
richardsonis		40	Stebbins & L. 1941	Fo	,,
rigens	Deer Grass	40	,, ,,	Fo	,,
sylvatica (*umbrosa*)		40	Avdulov 1931	Fo	,,
pungens		42	Nielsen & H. 1937	Fo	,,
LYCURUS $x=10$					
phleoides	Texas Timothy	40	Avdulov 1931	Fo	U.S.A.— Argentine

TRIBE VI: ZOISIEAE

TRAGUS $x=20$					
racemosus		40	Avdulov 1928	Sb	Med., N. S. Africa
ZOISIA $x=20$?					
matrella	Manilla G.	*c.* 40	Thomas unp.	HSb	S.E. Asia, S. Austral
japonica	Korean Lawn G.	—		H	Kor., Japan

TRIBE VII: CHLORIDEAE

BECKMANNIA $x=7$					
erucaeformis	Slough G.	14	Avdulov 1931	Sb	S. Eur., W. Asia
syzigachne	American S. G.	14	Nielsen & H. 1937	Sb	E. Asia, N. Amer.
BOUTELOUA $x=7$					
breviseta		21	Fults 1942	Fo	N. Americ
eriopoda	Black Grama	21	,, ,,	Fo	,,
hirsuta	Hairy Grama	21, 37, 42	,, ,,	Fo	,,
gracilis	Blue ,,	28, 35, 42, 61, 77	,, ,,	Fo	,,

BOUTELOUA (*cont.*)					
as *oligostachya*		40	Avdulov 1931		
curtipendula	Side-oats Grama	28, 35, 40, 42, 56, 70, 98	Fults 1942	Fo	N. America
rigidiseta		35	,, ,,	Fo	,,
SPARTINA $x=7$					
patens	Salt Meadow C. G.	28	Church 1936	Sb	N. America
v. *juncea*		42, 56	,, 1940		
pectinata	Prairie C. G.	28	,, 1929a	SbT	,,
as *michauxiana*		42, 84	,, 1940		
bakeri		42	,, ,,	Sb	N. America
caespitosa		42	,, ,,	Sb	,,
cynosuroides	Big Cord G.	42	,, ,,	Sb	,,
gracilis		42	,, ,,	Sb	,,
stricta		56	Huskins 1931	Sb	Europe
leiantha		56	Church 1940	Sb	N. America
alterniflora	Smooth C. G.	56	,, ,,	Sb	N. Am., Europe
v. *pilosa*		70	Huskins 1931		
townsendii (*alterniflora* × *stricta*)	Rice G.	126	,, ,,	SbT	S. England
CYNODON $x=9$					
diploidum n. sp.	Giant Star G.	18	E.K.J.	Fo	Trop. Africa
dactylon	Bermuda G.	36	Avdulov 1931, E.K.J.	FoHM	Cosmop.
		30?	Hunter 1934		
plectostachyus	E. Afr. Star G.	—		Fo	E. Africa
DINEBRA $x=10$					
retroflexa		20	Avdulov 1931	—	Afr.—India
CHLORIS $x=10$					
virgata	Sweet G.	14?	Nielsen & H. 1937	FoH	Tropics
as *caudata*		40	Krishnaswamy 1940		
distichophylla		20	,, ,,	Fo	S. America
gayana	Rhodes G.	20	Hunter 1934	Fo	Trop. & S. Afr.
		20, 40	Moffett 1944		
barbata		20	Avdulov 1928	Fo	Trop. Reg.
		40	E.K.J.	Fo	
acuminata		40	Avdulov 1928		—
bournei		40	E.K.J.	Fo	India
		50?	Krishnaswamy 1940		
cucullata		40	Avdulov 1928	Fo	N. America
truncata	Star G.	40	,, ,,	Fo	Australia
submutica		65?	Krishnaswamy 1940		
		80	Avdulov 1931	Fo	Mexico
acicularis	Umbrella G.	—		Fo.	Australia
verticillata	Windmill G.	—		Fo	,,

TRICHLORIS $x=10$					
mendocina		40	Avdulov 1931	—	N. & S. Am
BUCHLOË $x=10$					
dactyloides	Buffalo G.	60	,, ,,	Fo	Sask.—S. Mex.

TRIBE VIII : PAPPOPHOREAE

ENNEAPOGON $x=10$					
elegans		20	E.K.J.	Fo	N. E. Afr. —India

TRIBE IX : ARISTIDEAE

ARISTIDA $x=11$					
adscensionis		22	Avdulov 1931	Fo	Tropics
depressa		44	E.K.J.	Fo	India
hamulosa		44	Stebbins & L. 1941	Fo	N. Americ

TRIBE X : LEPTUREAE

PSILURUS $x=7$					
nardoides		14	Avdulov 1931	—	S. Eur.— Afgh.
PHOLIURUS (LEPTURUS) $x=7, 9$					
pannonicus		14	Avdulov 1931	—	S. Eur., Cauc.
filiformis		14	,, ,,	—	S. Eur., N Africa
incurvus		36	,, ,,	Sb	N. & S. Temp.
as *filiformis*		36	Wulff 1937a		
MONERMA (LEPTURUS) $x=13$					
cylindrica (subulata)		26	Avdulov 1931	Fo	Med.—S. Afr.
		52	Hunter 1934		

TRIBE XI : NARDEAE

NARDUS $x=13$					
stricta	Mat Grass	26	Avdulov 1928	—	Eur., N. A

TRIBE XII : LYGEEAE

LYGEUM $x=20$					
spartum	Esparto	40	Ramanujam 1938	T	Medit.

TRIBE XIII : AGROSTEAE

GASTRIDIUM $x=7$					
ventricosum	Nit Grass	14	Rutland 1941	Fo	Eur., Me
LAGURUS $x=7$					
ovatus	Harestail G.	14	Avdulov 1931	FoH	Medit.

APERA $x=7$					
spica-venti		14	Avdulov 1931	—	Eur., Asia
CHAETURUS $x=7$					
fasciculatus		14	Avdulov 1931	—	Sp., Port.
CORNUCOPIAE $x=7$					
cucullatum		14	Avdulov 1931	—	E. Medit.
MIBORA $x=7$					
verna		14	Avdulov 1931	—	W. Europe
AMMOPHILA (PSAMMA) $x=7$					
arenaria	Marram Grass	14, 28	Westergaard 1941	Sb	Europe
	Sea Matweed	28	Wulff 1937b		
breviligulata	Am. Beach G.	28	Church 1929a	Sb	N. America
baltica	Hybrid M. G.	28, 42	Westergaard 1943	Sb	N. Europe
PHLEUM $x=7$					
arenarium	Sand Timothy	14	Wulff 1937a	Sb	Europe
phleoides (*boehmeri*)		14	Avdulov 1931		Eur., N. As.
subulatum		14	Myers 1941	Fo	N. Amer.
nodosum		14, 21	Nordenskiöld 1941	Fo	N. Temp.
alpinum	Mountain T.	14, 28	Gregor & S. 1930	Fo	N. Arctic
commutatum (*alpinum*)		28	Nordenskiöld 1941	Fo	Scandinavia
paniculatum (*asperum*)	Rough T.	28	Avdulov 1928		Eur., S.W. Asia
pratense	Timothy, Catstail	42	Gregor & S. 1930	Fo	Eur., N. As.
		42	Myers 1944		
AGROSTIS $x=7$					
biebersteiniana		14	Sokolovskaja 1938	Fo	S. Russia
elegans		14	,, ,,	Fo	S.W. Eur., N. Afr.
nebulosa	Cloud Grass	14	Avdulov 1931	FoH	Spain
setacea	Bristle Bent G.	14	Maude 1940	Fo	Europe
canina	Brown Bent	28	Sokolovskaja 1938	H	Temp.
tenuis	Fine Bent	28	Avdulov 1931	FoH	,,
semiverticillata (*verticillata*)	Water B.	28	,, ,,	Fo	Europe, etc.
stolonifera	Marsh Bent	28	Sokolovskaja 1938	FoH	Eur., Asia, N. Amer.
as *alba* v. *maritima*		28	Nielsen & H. 1937		
v. *prorepens*		35	Sokolovskaja 1938		
v. *palustris*		28, 56	Church 1936		
		42	Müntzing 1937c		
gigantea	Black Bent	42	Sokolovskaja 1938	FoH	Eur., Asia, N. Amer.
as *alba* v. *coartata*		42	Avdulov 1931		
as *nigra*		42	Maude 1940		
clavata		42	Sokolovskaja 1938	Fo	N. Eur., N. Asia

AGROSTIS (*cont.*)					
diegoensis		42	Stebbins & L. 1941	Fo	California
exarata	Spike Redtop	42	,, ,,	Fo	N. America
hallii		42	,, ,,	Fo	,,
borealis	Arctic Bent	56	Sokolovskaja 1938	Fo	N. & Arctic
idahoensis	Idaho Redtop			Fo	N. America
ALOPECURUS $x=7$					
aequalis	Orange Foxtail	14	Johnsson 1941	—	N. Temp.
as *fulvus*		14	Kattermann 1930		
as *geniculatus*		14	Church 1929b		
amurensis		14	Strelkova 1938	Fo	Siberia
bulbosus		14	Maude 1940	Fo	Europe
gerardi		14	Johnsson 1941	Fo	Eur., S.W. Asia
heleochloides		14	,, ,,	Fo	Chile
myosuroides	Slender F.	14	Kattermann 1930	—	Eur., N. As
as *agrestis*		14	Avdulov 1928		
utriculatus		14	Strelkova 1938	Fo	Eur., S.W. Asia
geniculatus	Water F.	28	Avdulov 1928	—	N. Temp.
laxiflorus		28	Strelkova 1938	Fo	Bokhara
mucronatus		28	,, ,,	Fo	C. Asia
seravschanicus		28	,, ,,	Fo	Turkestan
soongaricus		28	,, ,,	Fo	Siberia
ventricosus		28	,, ,,	Fo	Eur., N. As
pratensis	Meadow F.	28	Rancken 1934	Fo	N. Temp.
		28+0-2f	Johnsson 1941		
		42	,, ,,		
aucheri		56	Strelkova 1938	Fo	S.W. Asia
dasyanthus		56	,, ,,	Fo	,,
glacialis		56	,, ,,	Fo	,,
himalaicus		56	,, ,,	Fo	N. India, etc
vaginatus		56	,, ,,	Fo	S.W. Asia
roshevitzianus (*alpinus*)		70	Avdulov 1931	Fo	Siberia
borealis		98	Strelkova 1938	Fo	N. & Arctic
pseudobrachystachys		98	,, ,,	Fo	Siberia
antarcticus		112-116	Johnsson 1941	Fo	S. America
alpinus	Alpine F.	119-122	,, ,,	Fo	Arctic
glaucus		130	Sokolovskaja & S. '38	Fo	C. Asia
POLYPOGON $x=7$					
monspeliensis	Annual Beard G.	28	Avdulov 1931	H	Medit.
littoralis		28	Rutland 1941		Europe,
as *fugax*		42	Avdulov 1931		C. Asia
CALAMAGROSTIS $x=7$ [High Polyploids Apomictic]					
arundinacea	Reed Grass	28	Avdulov 1931	Fo	N. Temp.
gracilescens		28	Nygren, L. & L. 1942	Fo	N. Europe
varia		28	,, ,,	Fo	Eur., N. As
lapponica		42	,, ,,	Fo	N. Temp.
obtusata		42	,, ,,	Fo	Siberia

CALAMAGROSTIS (*cont.*)					
canescens (*lanceolata*)	Small Reed	28, 42, 56	Nygren, L. & L. 1942	—	Eur., Temp. Asia
purpurea		28, 42, 56	,, ,,	Fo	N. Eur., N. Asia
epigeios	Bush Grass	28, 35, 42, 56	,, ,,	—	Eur., Temp. Asia
		28, 56	Westergaard 1941		
		c. 70	Avdulov 1931		
neglecta		28	Flovik 1940	Fo	N. Temp.
		28, 56	Rozanova 1940b		
		c. 70	Avdulov 1931		
		28, 42, 56, *c.* 70	Nygren, L. & L. 1942		
PHIPPSIA $x=7$					
algida		28	Flovik 1940	—	N. & Arct.
concinna		28, 29	,, ,,	—	,,

TRIBE XIV: PHALARIDEAE

ANTHOXANTHUM $x=5$					
aristatum		10	Avdulov 1928	—	Spain
ovatum		10	Östergren 1942	—	Spain, Mor.
odoratum	Sweet Vernal G.	10, 20	,, ,,	FoHM	Eur., N. As., N. Africa
amarum		80	,, ,,	—	S.W. Europe
PHALARIS $x=6, 7$					
brachystachys		12	Parthasarathy 1938	Fo	Medit., S.W. Asia
		14	Miège 1939		
canariensis	Canary G.	12	Avdulov 1928	G	Medit.
angusta		14	Saura 1943	Fo	Argentine
coerulescens		14	Parthasarathy 1938	Fo	Medit.
		28	Miège 1939		
lemmoni		14	Parthasarathy 1938	Fo	California
paradoxa		14	,, ,,	Fo	Medit.
arundinacea	Reed C. G.	14, 28	Church 1929b	FoH	N. Temp.
californica		28	Stebbins & L. 1941	Fo	N. America
canariensis?		28	Nakajima 1935	—	
minor		28	Avdulov 1931	Fo	Med., N. As.
tuberosa	Toowoomba C.G.	28	Nielsen & H. 1937	Fo	Medit.
HIEROCHLOË $x=7$					
odorata	Holy G.	28	Kattermann, T. 1936	FoH	N. & Arctic
		42	Avdulov 1931		
alpina		56	Flovik 1940	Fo	,,

TRIBE XV : FESTUCEAE

BRIZA $x=5, 7$					
minor		10	Avdulov 1931	H	Eur., S.W. N. Asia
media	Quaking Grass	14	,, ,,	FoH	,, ,,
maxima		14	Kattermann 1933	H	Medit.
elatior		14+1-3f	Avdulov 1931	FoH	S.E. Europ S.W. Asia
CATABROSA $x=5$					
aquatica		20	Avdulov 1931	Fo	Europe, et
GLYCERIA $x=5, 7$					
declinata		20	Maude 1940	Fo	W. Europe
pallida		20	M. & S. 1935	Fo	N. Americ
fluitans	Manna Grass	40	Maude 1940	FoG	N. Temp.
		28	Stählin 1929		
plicata		40	Maude 1940	Fo	Eurasia
		28	Stählin 1929		
nervata	Fowl M. G.	28	,, ,,	Fo	N. Americ
grandis	American M.G.	28	Nielsen 1939	Fo	,,
aquatica	Reed Sweet G.	28	Stählin 1929	Fo	Eur., N. A
		56	,, ,,		
SPHENOPUS $x=6$					
divaricatus		12	Avdulov 1931	—	Medit.
CYNOSURUS $x=7$					
balansae		14	Avdulov 1928	Fo	N. Africa
cristatus	Crested D.	14	,, 1931	FoH	Europe
echinatus	Rough Dogstail	14	,, 1928	—	Eurasia
DACTYLIS $x=7$					
aschersoniana		14	Müntzing 1937a	Fo	N. Europe
glomerata	Cocksfoot	28	,, ,,	Fo	O.W. Tem
		27, 28, 29, 30	Myers & Hill 1940	Fo	
LOLIUM $x=7$					
persicum		14	Avdulov 1931	Fo	S.W. Asia
multiflorum	Italian Rye-G.	14	Péto 1933	Fo	Europe
		(28)	Shalygin 1941		
remotum	Annual Rye-G.	14	Jenkin & T. 1938	Fo	Eur., T. A
temulentum	Darnel	14	,, ,,	—	Eurasia
rigidum		14	,, ,,	Fo	,,
loliaceum		14	,, ,,	Fo	S.E. Eur., S.W. Asia
perenne	Per. Rye-G.	14	Thomas 1936	FoH	Eur., T. A
		14, (21)	Müntzing 1937c		
		(28)	Shalygin 1941		
VULPIA (FESTUCA) $x=7$					
alopecurus		14	Avdulov 1928	Fo	Medit.
bromoides	Squirreltail F.	14	Stählin 1929	—	Temp.
myuros		14	Avdulov 1928	Fo	,,
		42	Tanji 1925		
membranacea		42	Maude 1940	Fo	Eur., Medit

BROMUS $x=7$

arvensis	Field Brome	14	Avdulov 1928	—	Eur., N. As.
brizaeformis	Quaking B. G.	14	" "	Fo	S.W. Asia
ciliatus	Fringed B. G.	14	Stählin 1929	Fo	N. America
intermedius		14	Avdulov 1928	—	—
japonicus (*abolini*)	Japanese B. G.	14	" "	Fo	Eur., Asia
Kalmii		14	Stählin 1929	—	—
orcuttianus		14	Stebbins & L. 1941	Fo	N. America
grandis		14	" "	Fo	"
laevipes		14	" "	Fo	"
pseudo-arvensis		14	Cugnac & S. 1941	Fo	S. Europe
squarrosus		14	Stählin 1929	Fo	S. Eur., S.W. & N. Asia
sterilis	Barren B.	14	" "	—	"
tectorum	Downy B.	14	Cugnac & S. 1941	Fo	Eur., N. As.
arduennensis		14	Stählin 1929	Fo	Ardennes
		28	Cugnac & S. 1941		
macrostachys		14	Stählin 1929,	—	Medit.
		28	Avdulov 1928		
ramosus	Hairy B.	14	Stählin 1929	Fo	Europe
		28	Maude 1940		—
secalinus	Rye B.	14	Nielsen 1939	—	Eur., Med., N. Asia
		28	Cugnac & S. 1941		
arenarius (*australis*)	Austr. B.	28	Stählin 1929	Fo	Australia
albidus (*biebersteinii*)		28	Avdulov 1931	—	S.W. Asia
anomalus		28	Nielsen & H. 1937	Fo	Mexico
hordeaceus	Soft B.	28	Nilsson 1937	—	Eur., N. Afr., N. Asia
(*mollis*)		28	Cugnac & S. 1941		
interruptus		28	Maude 1940	Fo	Britain
lepidus		28	" "	Fo	Europe
racemosus	Smooth B.	28	Knowles 1944	—	Europe
madritensis	Wall B.	28	Cugnac & S. 1941	—	Eur., N. Afr., S.W. Asia.
		42	Stählin 1929		
rigidus	Ripgut G.	28	Stebbins & L. 1941	Fo	Medit.
		42	Cugnac & S. 1941		
unioloides	Rescue G.	28	Stählin 1929	Fo	Temp. Am.
		42	Avdulov 1931		
cappadocicus		42	Stählin 1929	Fo	Asia Minor
macrantherus		42	Cugnac & S. 1941	Fo	Eur., Med.
polyanthus		42	Stählin 1929	—	N. Amer.
pumpellianus		42	" "	—	W. N. Am.
sitchensis		42	" "	Fo	Sitcha Is.
trinii		42	Knowles 1944	Fo	Chile
variegatus		42	Stählin 1929	Fo	Cauc., Med.
erectus	Upright B.	42	" "	Fo	Eur., As. M.
v. *eu-erectus*		56	Avdulov 1931		
marginatus		42	Nielsen & H. 1937	Fo	N. America
		56	Avdulov 1931		

BROMUS (*cont.*)

breviaristatus		56	Stählin 1929	Fo	W: N. Ame
carinatus	Calif. B.	56	„ „	Fo	„
commutatus	Smooth B.	56	Nielsen 1939	Fo	Eur., S.W. Asia
gussonii	Great B.	56	Cugnac & S. 1941	Fo	Eur., Med.
inermis	Smooth B.	42	Stählin 1929	Fo	Eur., Cauc. N. As.
		56, 70	Nielsen 1939		
rigidus (*villosus*)		42	Cugnac & S. 1941	Fo	Eur., Med.
		56, 70	Beck & H. 1932		
mango		—		G	Chile

FESTUCA $x=7$ [High Polyploids Viviparous or Apomictic]

geniculata		14	Avdulov 1931	Fo	Medit.
pratensis	Meadow Fescue	14	Rancken 1934	Fo	Eur., N. As.
		14+f	Nilsson 1940		
rigida		14	Maude 1939	—	Eur., N. Af
tenuifolia (*capillata*)	Sheep's F.	14	Thomas, M. 1939	Fo	Europe
varia		14, 28, 42	Stählin 1929		Eur., Med., Asia Mino
ovina	Sheep's Fescue	14	Turesson 1938	FoH	Temp. Arc
		56	Church 1929a		
		70	Turesson 1930		
v. *vivipara*		21, 28, 42	L. & L. 1942		
		49	Flovik 1940		
rubra	Red Fescue	14	Stählin 1929	FoH	N. Temp., Arct.
v. *vivipara*		42	„ „		
		56, 70	Lewitzky & K. 1927		
ciliata		28	Avdulov 1928	Fo	Eur., S.W. Asia
arundinacea	Tall Fescue	28	Stählin 1929	Fo	Europe
		42	Jenkin 1933		
		70	Lewitzky & K. 1927		
altissima (*sylvatica*)	Reed Fescue	42	Stählin 1929	Fo	Eur., Asia
fallax	Chewings F.	42	Maude 1940	Fo	Temp.
gigantea	Giant Fescue	42	Stählin 1929	Fo	Eur., N. As Trop. Afr.
longifolia	Hard Fescue	42	Maude 1940	FoH	Europe
californica	Calif. F.	56	Stebbins & L. 1941	Fo	California
maritima		70	Wulff 1937a	Fo	Medit.
kryloviana		70	S. & S. 1940	Fo	Pamir

POA $x=7$ [High Polyploids Viviparous or Apomictic]

chaixii	Meadow Grass	14	Avdulov 1931	Fo	Eur., As. M
infirma (*exilis*)		14	Nannfeldt 1937	Fo	Medit.
supina		14	„ „	Fo	Europe
trivialis	Rough-stalked M. G.	14	„ „	Fo	N. Temp.

POA (*cont.*)

alpina	Alpine M. G.	14, 32,	Sokolovskaja & S.	Fo	Caucasus
		34, 42	1938, 1940		Altai
		33	Böcher 1938a		Greenland
		c. 48	,, ,,		Faeroe Is.
v. *vivipara*		44, 42+4f	Flovik 1940		—
annua	Annual M. G.	28	Armstrong 1937	FoH	Cosmop.
badensis		28	,, ,,	Fo	C. Europe
cusickii	Blue Grass	28	Stebbins & L. 1941	Fo	N. America
douglasii		28	,, ,,	Fo	California
cuspidata		28	W. L. Brown 1939	Fo	N. America
sylvestris		28	,, ,,	Fo	,,
wolfii		28	,, ,,	Fo	,,
maroccana		28	Nannfeldt 1938	Fo	Morocco
rivulorum		28	,, ,,	Fo	,,
sterilis		28	Stählin 1929	Fo	E. Eur., N. Asia
violacea		28	,, ,,	Fo	S. Europe
iridifolia etc.		28	Saura 1943	Fo	Argentine
bulbosa		28	Armstrong 1937	FoH	Eur., E. As.,
		28, 45	Åkerberg 1942		N. Afr.
palustris	Fowl B. G.	28, 42	Avdulov 1931	Fo	N. Temp.
		42	Stählin 1929		
nemoralis	Wood M. G.	28	Avdulov 1931	FoH	Eur., N. As.
		42	Armstrong 1937		
		c. 56	Müntzing 1933b		
sibirica		28	S. & S. 1938	Fo	Cauc., Sib.
altaica		42	,, ,,	Fo	Altai
tibetica		42	,, ,,	Fo	Tibet
pratensis	Smooth-stalked M. G. Kentucky Blue G.	28, 56, 70	Avdulov 1931	FoH	N. Temp.
v. *vivipara*		42+4f	Flovik 1940		
v. *angustifolia*		50-65	Åkerberg 1942		
v. *eupratensis*		50-124	,, ,,		
v. *alpigena*		68, 83	,, ,,		
v. *irrigata*		84-95	Åkerberg 1942		
arachnifera		42	W. L. Brown 1939	Fo	N. America
caesia		42	Stählin 1929	Fo	N. Europ.
compressa	Canada B. G.	42	Avdulov 1931	Fo	North Reg.
		42, 56	Armstrong 1937		
conferta		56	,, ,,	Fo	N. Europ.
epilis	Skyline B. G.	56	,, ,,	Fo.	N. America
arctica		56	Flovik 1940	Fo	North Reg.
		38, 56, 68, 75	Nannfeldt 1940		
laxa		*c.* 78	,, ,,	Fo	N. Europe
glauca		*c.* 70	Flovik 1940	Fo	N.T. & Arc.
abbreviata		76	,, ,,	Fo	Arctic
scabrella	Skyline B. G.	63-84	Stebbins & L. 1941	Fo	N. America
secunda	Sandberg B. G.	82-86	,, ,,	Fo	Chile, N. Am.

SCLEROPOA (FESTUCA) $x=7$					
rigida		14	Avdulov 1931	—	W. Eur., Medit.
SCLEROCHLOA $x=7$					
dura		14	Avdulov 1931	—	Eur., Asia
BOISSIERA $x=7$					
pumilio (bromoides)		14	Avdulov 1931		E. Medit.
LAMARCKIA $x=7$					
aurea		14	Avdulov 1931	—	Europe
DESMAZERIA $x=7$					
sicula		14	Avdulov 1931	—	N. & S. A
PUCCINELLIA (ATROPIS) $x=7$					
distans		14	Avdulov 1931	Fo	Temp.
vahliana		14	Flovik 1940	Fo	Arctic
phryganodes		28	,, ,,	Fo	,,
angustata		42	,, ,,	Fo	,,
ARCTOPHILA $x=7$					
fulva		42	Flovik 1940	—	N. T. & A
SESLERIA $x=7$					
autumnalis		28	Avdulov 1928	Fo	S. Eur., As. Mino
caerulea		28	Kattermann 1930	Fo	Europe
tenuifolia		42	Avdulov 1928	Fo	S. Europe
BRACHYPODIUM $x=7, 9, 15$					
sylvaticum	False Brome	18	Avdulov 1928	—	Eur., S.W Asia
pinnatum	Heath F. B.	28	Katterman 1930	—	Eur., N. A N. Asia
distachyon		30	Avdulov 1931	—	Medit.
MELICA $x=9$					
aristata		18	Stebbins & L. 1941	Fo	California
altissima		18	Hunter 1934	Fo	S. Europe, N. Asia
californica		18	Stebbins & L. 1941	Fo	California
ciliata		18	Avdulov 1931	Fo	Eur., N. A S.W. Asia
fugax	Little Onion G.	18	Stebbins & L. 1941	Fo	California
imperfecta	Cal. Melick	18	,, ,,	Fo	,,
nutans	Mountain M.	18	Avdulov 1931	—	Eur., N. A
stricta	Rock M.	18	Stebbins & L. 1941	Fo	W:N. Ame
subulata	Alaska O. G.	18	,, ,,	Fo	,,
torreyana	Torrey M.	18	,, ,,	Fo	California
uniflora	Wood M.	18	Wulff 1939b	—	Eur., S.W Asia
sp.		36	Melland unp.	Fo	Chile
MOLINIA $x=9$					
caerulea	Flying Bent, Purple Melick	36	Jefferies, T. 1936	—	Eur., N. As

DUPONTIA $x=11$					
fisheri		44+f	Flovik 1940	Fo	Arctic
v. *psilosantha*		88+f	,, ,,		,,

TRIBE XVI : AVENEAE

SCHISMUS $x=6$					
calycinus		12	Avdulov 1931	—	Morocco
VENTENATA $x=7$					
macra		14	Avdulov 1931	—	A. Minor, Mesopot.
HOLCUS $x=7$					
lanatus	Yorkshire Fog	14	Avdulov 1928	H	Europe
mollis	Creeping F.G.	14	Stählin 1929	—	,,
CORYNEPHORUS (AIRA) $x=7$					
canescens	Grey Hair G.	14	Avdulov 1931	FoH	S. & W. Eur.
AIRA $x=7$					
caryophyllea	Silver Hair G.	14	Wulff 1937b	H	Eur., S.W. Asia
praecox	Early Hair G.	14	Hagerup 1939	—	Eur., N. Am.
multiculmis		28	,, ,,	Fo	Europe
capillaris		—		H	S. Eur.—Asia
DESCHAMPSIA $x=7$ [High Polyploides Apomictic]					
setacea	Marsh Hair G.	14	Hagerup 1939	Fo	Europe
arctica		28	,, ,,	Fo	N. Amer., Arctic
bottnica		28	,, ,,	Fo	Temp.
caespitosa	Tufted H. G.	28	Avdulov 1928	Fo	,,
flexuosa	Wavy H. G.	28	Stählin 1929	FoH	N. Temp.
pumila		28	Hagerup 1939	Fo	Arctic
alpina	Alpine H. G.	39, 41, 49	Flovik 1940	—	,,
		49	Maude 1940		
		56	Hagerup 1939		
KOELERIA $x=7$					
glauca		14, 28	Böcher 1943	Fo	Eur., N. As.
cristata	June Grass	28	Stebbins & L. 1941	Fo	N. Temp.
gracilis	Slender H.G.	28, 30	Maude 1940	Fo	Eur., N. As.
vallesiana		42	,, ,,	Fo	Europe
pyramidata (*cristata*)		70, 84	Böcher 1943	Fo	S. Europe
TRISETUM (AVENA) $x=7, 12$					
sibiricum		14	Avdulov 1931	Fo	O.W. Arctic
flavescens	Golden Oat G.	24	,, ,,	Fo	N. Temp.
		28	Nakajima 1930		
spicatum		28	Flovik 1938	Fo	N. Temp. & Arctic
canescens		42	Stebbins & L. 1941	Fo	N. America

AVENA $x=7$					
brevis	Short Oat	14 (28)	Spier 1934 Dorsey 1939	Fo	Europe
bruhnsiana		14	Emme 1930	—	Caspian
clauda		14	„ „	—	Gr., A. Mi N. Africa
eriantha (*pilosa*)		14	„ „	—	A. Min., Sy N. Africa
hirtula		14	„ „	—	S. Europe
nudibrevis	Naked Oat	14	Stanton 1936	G	„
ventricosa		14	Emme 1930	Fo	Algeria
wiestii	Desert Oat	14	„ „	Fo	Egy., Arab Persia
strigosa	Sand Oat	14 (21), 28	Nishiyama 1936	Fo	*cult*, Med.
abyssinica	Abyss. Oat	28	Spier 1934	GFo	Abyssinia
as *braunii*		28	Nikolajewa, T. 1936		
as *hildebrandtii*		28	„ „		
as *schimperi*		28	„ „		
barbata	Slender Wild Oat	28	Huskins 1927	Fo	Med., Pers.
vaviloviana		28	Emme 1930	G	—
byzantina	Red Oat	42	Huskins 1927	G	Eur., N. As
as *algeriensis*		42	Dorsey 1925		
chinensis (*nuda*)	Ch. Naked Oat	42	Huskins 1927	G	*cult*, China
fatua	Wild Oat	42	Philp 1933a	FoTo	S.W. Asia
ludoviciana	Wild Red Oat	42	Huskins 1927	G	Medit., S.W Asia
sterilis	Animated Oat	42	Spier 1934	Fo	„ „
sativa	Oat	42 (63)	Emme 1930 Müntzing 1937c	GFo	*cult*, Persia
HELICTOTRICHON (AVENA) $x=7$					
pubescens	Downy Oat G.	14 16	Carson & Fyfe unp. T. 1936	Fo	Eur., N. As
pratensis	Meadow Oat G.	42	Maude 1940	Fo	„ „
versicolor		60-62	Kattermann, T. 1936	Fo	S. Europe
ARRHENATHERUM $x=7$					
elatius	Tall Oat G.	28	Avdulov 1931	Fo	Europe
v. *bulbosum* (*tuberosum*)	Onion Couch	28	Rutland 1941		
DANTHONIA $x=7, 9, 12$					
$x=7$					
cunninghamii		42	Calder 1937	Fo	N. Zealand
ovata		42	„ „	Fo	„ „
raoullii	Red Tussock	42	„ „	Fo	„ „
$x=9$					
californica	Calif. Oat G.	36	Stebbins & L. 1942	Fo	N. America
unispicata	One-spike Oat G.	36	„ „	Fo	„

DANTHONIA (*cant.*)					
australis	Hassock	36	Calder 1937	Fo	N. Zealand
crassiuscula		36	,, ,,	Fo	,, ,,
oreophila		36	,, ,,	Fo	,, ,,
$x=12$					
gracilis		24	,, ,,	Fo	,, ,,
nigricans		24	,, ,,	Fo	,, ,,
setifolia		24	,, ,,	Fo	,, ,,
pilosa		48	,, ,,	Fo	,, ,,
semiannularis		48	,, ,,	Fo	,, ,,
buchanani	Desert D.	*c.* 72	,, ,,	Fo	,, ,,
SIEGLINGIA $x=9$					
decumbens	Heath G.	36	Scheerer 1940	—	Eur., N. Afr.
		124	Maude 1940		N. Asia

TRIBE XVII : HORDEAE

HORDEUM $x=7$					
chilense		14	Andres 1941	Fo	S. America
marinum (*maritimum*)	Sea Barley	14	Wulff 1937a	—	Eur., S.W. Asia
pusillum	Wild B.	14	Kihara 1924	Fo	N. & S. Am.
spontaneum	Wild Sprat B.	14	Aase & P. 1926	Fo	S.W. Asia
vulgare	Barley	14	Kihara 1924	AG	*cult*, Abys.
as *distichon*	Two-Rowed B.	14	Kagawa 1929		
as *hexastichum*	Six-Rowed B.	14	Ghimpu 1929a		
		(28)	Karpechenko 1938		
jubatum	Foxtail B.	14	Tanzi 1925		N. & S. Am.
		28	Aase & P. 1926		
murinum	Wall B.	14	Stolze 1925		Eur., N. Afr., S.W. Asia
		28	Aase & P. 1926		
bulbosum		28	Stählin 1929	Fo	Medit.
hystrix (*gussoneanum*)	Medit. B.	14, 28	Chin 1941	Fo	Medit.
nodosum	Meadow B.	14, 28	,, ,,	Fo	N. Temp.
		42	Griffee 1927		
AMBLYOPYRUM (AEGILOPS) $x=7$					
muticum		14	Kihara 1937b	Fo	S.W. Asia
HAYNALDIA $x=7$					
villosa		14	Kostoff 1936	Fo	Eur.,S.W.As.
SECALE $x=7$					
ancestrale		14	Kostoff 1937	—	—
vavilovii		14	,, ,,	G	Armenia
africanum	African Rye	14+f	Emme 1928	Fo	N. Africa
fragile	Hungarian R.	14+1-2f	,, ,,	G	S.E. Eur., N. Asia
montanum	Wild Rye	14+1-2f	,, ,,	Fo	Med.—C. Asia
cereale	Rye	14+1-4f	Hasegawa 1934	G	*cult*, Persia
		14+1-8f	Müntzing 1943		
		(7) (21)	,, 1937b, c		
		(28)	Dorsey 1936		

ELYMUS $x=7$					
canadensis	C. Wild Rye	28	Avdulov 1928	Fo	N. America
europaeus as *Hordeum sylvaticum*		28	Stählin 1929, 1931	Fo	Eur., Cauc.
giganteus		28	Avdulov 1931	Fo	Rus., Sib.
glaucus	Blue W. R.	28	Stebbins & L. 1941	Fo	Turkestan
sibiricus		28	Avdulov 1928	Fo	N. Asia
virginicus (*curvatus*)	Virginia W. R.	28	,, 1931	Fo	N. America
triticoides	Alkali Rye G.	28, 42	Stebbins & L. 1941	Fo	W:N. Am
dahuricus		42	Avdulov 1928	Fo	N. Asia
condensatus	Giant W.R.	28, 56	Stebbins & L. 1941	Fo	W:N. Ame
arenarius	Sea Lyme G.	56	Stählin 1929	FoSbSu	Europe
mollis	Amer. Dune G.			—	N. Asia, N. Americ
AEGILOPS $x=7$					
aucheri	Goat Grass	14	Kihara 1937	Fo	S.W. Asia
bicornis		14	,, ,,	Fo	Egypt, Syr
caudata		14	,, ,,	Fo	S.W. Asia
comosa		14	,, ,,	Fo	Greece
ligustica		14	Schiemann 1929	Fo	—
longissima		14	Kihara 1937b	Fo	Egypt
speltoides		14	,, ,,	Fo	Egypt, Syr
sharonensis		14	Schiemann 1929	Fo	Palestine
squarrosa		14	Kihara 1937	Fo	S.W. Asia
umbellata		14	,, ,,	Fo	Asia Minor
uniaristata		14	,, ,,	Fo	Greece
biuncialis		28	,, ,,	Fo	Europe
columnaris		28	,, ,,	Fo	Asia Minor
cylindrica		28	,, ,,	Fo	Europe
kotschyi		28	,, ,,	Fo	,,
ovata		28	,, ,,	Fo	,,
triuncialis		28	,, ,,	Fo	,,
peregrina (*variabilis*)		28	,, ,,	Fo	Medit.
ventricosa		28	,, ,,	Fo	Europe
crassa		28, 42	,, ,,	Fo	S.W. Asia
triaristata		28	,, ,,	Fo	Europe
v. *vulgaris*		42	,, ,,		
v. *recta*		42	Senjaninova 1930		
turcomanica		42	Eig 1929, T. 1936	Fo	Transcasp.
TRITICUM $x=7$					
aegilopoides	Wild Small S.W.	14	Darlington 1932a	—	Asia Mino
monococcum	Small Spelt W.	14	,, ,,	G	*cult*, relic
armeniacum		28	Makushina 1938	—	Armenia
dicoccoides	Wild Emmer	28	Longley & S. 1930	—	Syria
dicoccum	Emmer	28	Darlington 1932a	G	*cult*, relic
durum	Macaroni W.	28 (56)	Kihara 1936a Dorsey 1936	G	*cult*, N. Af
orientale	Khorasan W.	28	Percival 1926	G	*cult*, Pers.
persicum (*carthlicum*)		28	,, ,,		,,

TRITICUM (*cont.*)					
polonicum	Polish W.	28	Longley & S. 1930	G	*cult*, Med.
		(56)	Dorsey 1936		
pyramidale	Cone Wheat	28	Lilienfeld & K. 1934	G	*cult*, Egypt
timopheevi		28	Zhebrak 1944		*cult*, Pers.
turgidum	Rivet W.	28	Darlington 1932a	G	*cult*, Med.
compactum	Club W.	42	Longley & S. 1930	G	*cult*, Afgh.
macha		42	Eritzian 1932	G	*cult*, Pers.
sphaerococcum	Indian Dwarf W.	42	Percival 1926	G	*cult*, N.W. India
spelta	Large Spelt W.	42	„ „	G	*cult*, relic
vavilovianum		42	„ „	G	„
vulgare	Bread Wheat	42	„ „	G	„
		(21) (63)	Yamazaki 1934, 1937		
		(84)	Dorsey 1936		
edwardi (*durum* × *mon.*)		(42)	Zhebrak 1944	G	*expt.*
soveticum (*durum* × *timo.*)		(56)	„ „	G	„
borisovi (*vulgare* × *timo.*)		(70)	„ „	G	„
AGROPYRON $x=7$					
gmelini (*aegilopoides*)	Wheat Grass	14	Avdulov 1931	Fo	N. America
pectiniforme (*dagnae*)		14	„ „	Fo	E. Eur., N. Asia
triticeum (*prostratum*)		14	„ „	Fo	Eur., N. As.
spicatum	Blue bunch G.	14	Peto 1930	Fo	N. America
		28	Robertson & W. 1942		
villosum		14	Peto 1930	Fo	Eur.—Pers.
cristatum	Crested W.G.	14, 28	„ „	Fo	Eur., N. As.
		28	Avdulov 1931		
elongatum	Couch Grass	14	Simonet 1935	Sb	Europe
ciliare		28	Nakajima 1936	—	—
caninum	Bearded W. G.	28	Avdulov 1930	Fo	Eur., N. As.
japonicum		28	Nakajima 1936	—	Japan
junceum	Jointed C.G.	28	Peto 1930	Sb	Europe
v. *mediterraneum*		42	Simonet 1935		
mutabile		28	Avdulov 1928	—	„
orientale		28	„ „	Fo	N. Africa, S.W. Asia
pauciflorum	Slender W.G.	28	„ „	Fo	N. America
as *trachycaulon*		28	Peto 1929		
semicostatum		28	Nielsen & H. 1937	Fo	C. Asia
		42	Nakajima 1936		
sibiricum		28	Avdulov 1930	Fo	Eur., N. As.
repens	Couch Grass	28, 42	„ 1931	M	Temp.
smithii	Bluestem	28, 56	Peto 1930	Fo	N. America
duvalii		35, 42	Simonet 1935	Fo	*cult*, France
acutum		35	„ 1934c	Fo	Europe

AGROPYRON (*cont.*)					
intermedium (glaucum)		42	Peto 1930	Fo	Europe
littorale		42	Simonet 1935	Sb	,,
racemiferum		42	Nakajima 1936	—	Japan
obtusiusculum		42	Peto 1930	Fo	Den., Scand
pungens		42	,, ,,	Sb	Europe
tallonii		49	Simonet 1935	Fo	*cult*, France
campestre		56	,, ,,	—	Europe
caespitosum (*elongatum*)	Couch Grass	70	Peto 1936, Tzitzin 1933, Vakar 1936	Sb	Armenia
ASPERELLA $x=7$					
hystrix	Bottle-Brush G.	28	Avdulov 1928	Fo	N. America
SITANION $x=7$					
hanseni		28	Stebbins & L. 1941	Fo	N. America
hystrix		28	,, ,,	Fo	,,
jubatum		28	,, ,,	Fo	,,
AEGILOTRICUM $x=7$					
Aegilops ovata × *Triticum turgidum*		(56)	Percival 1936	G	*expt.*
TRITICALE $x=7$					
Tr. vulgare × *Secale cereale*		(56)	Müntzing 1939	G	*expt.*
AGROTRITICUM $x=7$					
Tr. vulgare × *Agropyron glaucum*, etc.		42	Tzitzin 1933	Fo	*expt.*

TRIBE XVIII : STIPEAE

MILIUM $x=9, 14$					
vernale	Early Millet	18	Avdulov 1928	Fo	Medit.
effusum	Spreading M.	28	,, ,,	—	N. Temp.
STIPA $x=9, 10, 11, 12$					
$x=9, 17$					
californica	Cal. Needlegrass	36	Stebbins & L. 1941	Fo	California
elmeri		36	,, ,,	Fo	W:N. Amer
lemmoni	Lemon N.	34, 36	,, ,,	Fo	California
lepida	Foothill N.	34	,, ,,	Fo	,,
thurberiana	Thurber N.	34	,, ,,	Fo	,,
occidentalis	Western N.	36	,, ,,	Fo	W:N. Amer
$x=10$					
coronata		40	,, ,,	Fo	California
speciosa	Desert N.	60	,, ,,	Fo	Calif., Chil
cernua		70	,, ,,	Fo	California
$x=11$					
papposa		44	Avdulov 1931	Fo	—
capillata		44	,, ,,	Fo	S. Eur., N. Asia
joannis		44	,, ,,	Fo	Eur., N. Asi

STIPA (*cont.*)					
lessingiana		44	Avdulov 1931	Fo	Eur., N. Asia
pulcherrima		44	" "	Fo	"
stenophylla		44	" "	Fo	"
ucrainica		44	" "	Fo	N. Asia
comata	Needle and Thread G.	44-46	" "	Fo	N. America
lettermani		66	Stebbins & L. 1941	Fo	N. America
pulchra	Nodding N.	64 66	" " Nielsen 1939	Fo	"
$x=12$ etc.					
sibirica	Sleepy Grass	24	Avdulov 1928	Fo	N. As., Him.
viridula		82	Johnson & R. 1943	Fo	W. N. Amer.
ORYZOPSIS $x=12$					
miliacea		24	Avdulov 1928	Fo	Medit.
virescens		24	" "	Fo	Eur., Cauc.
hymenoides	Indian Rice G.	48	Stebbins & L. 1941	FoG	N. America
STIPORYZOPSIS $x=12$					
caudata (*O. hym.* × *S. vir.*)		65	Johnson & R. 1943	Fo	*nat. hybrid*
PHAENOSPERMA $x=12$					
globosa		24	Avdulov 1931	Fo?	China
URACHNE (NASELLA) $x=19$					
trichotoma		38	Avdulov 1928	Fo	Temp.S.Am.

TRIBE XIX: ORYZEAE

CHIKUSICHLOA $x=12$					
aquatica		24	Hirayoshi 1937	Fo	Japan
HYGRORYZA $x=12$					
aristata		24	Hirayoshi 1937	Fo	Trop. Asia
ORYZA $x=12$					
barthii		24	Heyn 1936	GFo	Trop. Africa
glaberrima		24	Ramanujam 1938	GFo	Trop. Africa
longistaminata		24	" "		—
meyeriana		24	Heyn 1936, E.K.J.	Fo	Trop. Asia
officinalis	Wild Rice	24	Nandi 1936	Fo	"
perennis (*cubensis*)	Cuban Rice	24	Gotoh & O. 1933	G	Trop. Amer.
latifolia		24 (48)	Heyn 1936 Gotoh & O. 1933	GFo	N. Amer., W. Indies
sativa	Rice	24 (36, 48)	Avdulov 1931 Ichijima 1934	AGFo	*cult*, India
coarctata	Wild Sindh R.	48	Parthasarathy 1938	Fo	India
eichingeri		48	Patak 1940	Fo	Tr. E. Africa
minuta		48	Nandi 1936	G	Philip Is.
sylvestris		48	Patak 1940	—	Trop. Africa
EHRHARTA $x=12$					
erecta		24	Parthasarathy 1939	Fo	S. Africa
as *panicea*		24	Avdulov 1931		
		48	Nakamori 1933		

EHRHARTA (*cont.*)					
calycina		48	Parthasarathy 1939	Fo	S. Africa
longiflora		48	” ”	Fo	”
MICROLAENA $x=12$					
stipoides		48	Parthasarathy 1939	Fo	Austr. N
LEERSIA $x=12$					
hexandra	Bareet G.	48	Ramiah 1935	Fo	Tropics
oryzoides	Cut G.	48	Ramanujam 1938	Fo	N. Temp.
v. *japonica*		60	Hirayoshi 1937	Fo	Japan
japonica		96	” ”		”
ZIZANIA $x=15, 17$					
aquatica	Annual Wild R.	30	Nandi 1936	G	N.E: U.S
latifolia	Manchurian W. R.	34	Hirayoshi 1937	GV	N. China
palustris	Indian W. R.	—		G	N. & E: U.S.A.
ZIZANIOPSIS					
miliacea	Southern W.R.	—		—	N. Ameri W. Indi

TRIBE XX: ARUNDINEAE

PHRAGMITES $x=12$					
communis	Common Reed	48, *c.*96	Avdulov 1931	DTToV	Cosmop.
CORTADERIA (GYNERIUM) $x=12$					
selloana	Pampas Grass	72+1f	Avdulov 1931	HT	S. Ameri
(*argentea*)		76	Hunter 1934		
ARUNDO $x=12?$					
donax	Spanish Reed	*c.* 100	Avdulov 1931	HT	Med.—J
		110	Hunter 1934		
HAKONECHLOA $x=12?$					
macra		50	M. & S. 1935	H	Japan

TRIBE XXI: CENTOTHECEAE

CENTOTHECA $x=12$					
lappacea		24	Avdulov 1931	Fo	O.W. T
UNIOLA $x=12$					
latifolia		24	Avdulov 1931	—	N. Amer
palmeri		—		G	”
paniculata	Seaside Oat	—		Sb	W. Indi

TRIBE XXII: BAMBUSEAE

ARUNDINARIA (SASAELLA) $x=12$					
iwatekensis		48	Uchikawa 1935	HTW	Japan

CHIMONOBAMBUSA $x=12$					
marmorea		48	Uchikawa 1933	HTW	China
INDOCALAMUS $x=12$					
wightianus	Nilgiri Bamboo	48	E.K.J.	HTW	India
PHYLLOSTACHYS $x=12$					
aurea	Golden B.	48	Uchikawa 1935	HW	China, Japan
edulis	Moso B.	48	„ „	WV	China
makinoi		48	„ „	W	Formosa
nigra	Black-joint B.	48	„ „	W	China, Japan
reticulata	Japanese B.	48	„ „	W	Japan
flexuosa		54?	Hunter 1934	W	China
marliacea		*c.* 72	Avdulov 1928	—	—
PLEIOBLASTUS (ARUNDINARIA) $x=12$					
fortunei		48	Hunter 1934	H	Japan
gramineus		48	Uchikawa 1935		—
hindsii		48	„ „	H	Hong Kong
chino (maximowiczii)		48	Yamaura 1933	H	China
simonii	Silverstripe B.	48	Uchikawa 1933	HW	„
pygmaeus	Carpet B.	54?	Hunter 1934	H	Japan
PSEUDOSASA $x=12$					
japonica	Arrow B.	48	Uchikawa 1935, E.K.J.	TW	Japan
SASA $x=12$					
kozasa		48	Yamaura 1933	HW	Japan
kurilensis		48	„ „	HW	„
paniculata		48	„ „	HW	„
SASAMORPHA $x=12$					
purpurascens (borealis)		48	Yamaura 1933	HW	Japan
SEMIARUNDINARIA $x=12$					
yashadake		48	Uchikawa 1935	W	Japan
SINOBAMBUSA $x=12$					
tootsik		48	Uchikawa 1933	W	Japan
TETRAGONOCALAMUS (CHIMONOBAMBUSA) $x=12$					
angulatus		48	Uchikawa 1935	HTW	China
BAMBUSA $x=12$					
argentea?		*c.* 72	Avdulov 1928	—	—
bambos (arundinacea)	Common B.	72	Janaki Ammal 1938	GFoHW	E. Indies
floribunda		72	Uchikawa 1935	W	Java
multiplex	Henge B.	72	„ „	HWFo	Trop. Asia
as *nana*		72	Yamaura 1933	H	Japan
polymorpha		72	E.K.J.	W	Burma
vulgaris	Feather B.	72	„	HWFo	Trop. Asia

DENDROCALAMUS $x=12$					
giganteus	Giant Bamboo	72	E.K.J.	HToW	Burma
longispathus		72	,,	W	,,
strictus	Male B.	72	Richharia & K. 1940, E.K.J.	HToW	Ind., Java
brandisii		72+2f	E.K.J.	W	Burma
OCHLANDRA $x=12$					
scriptoria		72?	E.K.J.	WTTo	India
travancorica		72?	,,	WTTo	S. India
MELOCANNA					
bambusoides		—		N	India

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Abbreviations—

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P.N.A.S. : *Proceedings of National Academy of Sciences*, Washington.
Z.I.A.V. : *Zeitschrift für induktive Abstammungs-und Vererbungslehre.*
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INDEX TO FAMILIES AND GENERA

Family names, heavy type.

Genus names { italic—no species counted
asterisked—counts summarised

Abelia 217
Aberia 112
Abies 47
Abroma 126
Abrus 170
Abutilon* 128
Acacia 155
Acalypha 134
Acanthaceae 269
Acanthocereus 118
Acanthopanax 199
Acanthorhiza 317
Acanthostachys 280
Acanthus 269
Acer 194
Aceraceae 194
Aceras 322
Achillea 235
Achyranthes 102
Achlys 63
Achras 207
Aconitum* 56
Acorus 303
Acrocomia 317
Actea 56
Actinidia 120
Actinidiaceae 120
Adananthera 156
Adansonia 126
Adenophora 246
Adenostyles 237
Adhatoda 269
Adina 216
Adlumia 69
Adonis 56
Adoxa 218
Adoxaceae 218
Aechmea* 280
Aegilops 347, 348
Aegilopsis 189
Aegilotricum 350
Aegle 191
Aegopodium 202
Aeluropus 333
Aerides 321
Aeschynomene 169
Aesculus 193
Aethionema* 72, 73
Aethusa 200
Afraegle 190
Aframomum 284
Afrocania 198
Agapanthus 300
Agathis 47
Agave* 315
Agavaceae 314
Ageratum 236
Aglaonema 303
Agrimonia 147
Agropyron 349
Agrostemma 90
Agrostis 337
Agrotriticum* 350
Aira, 345
Aizoaceae 95
Akebia 64
Alangiaceae 198
Alangium 198
Albizzia 155
Albuca 295
Alchemilla 147
Alectorolophus* 266
Aleurites 135
Alhagi 169
Alisma 276
Alismataceae 276
Alkanna 250
Allamanda 210
Allium 288
Alnus 179
Alocasia 303
Aloë* 296
Alonsoa 259
Alopecurus 338
Aloysia 271
Alpinia 283
Alsine 91
Alstonia 210
Alstroemeria 302
Alstroemeriaceae 302
Althaea 127
Altingia 176
Alyssum* 75
Amaranthaceae 102
Amaranthus 102
Amaryllidaceae 305
Amaryllis 306
Amberboa 231
Amblyopyrum 347
Ambrosia 227
Ambrosina 303
Amelanchier 151
Amherstia 153
Ammobium 230
Ammophila 337
Amomum 284
Amorpha 163
Amorphophallus 303
Ampelidaceae 189
Ampelopsis 189
Amphicarpa 169
Amyris 191
Anacamptis 320
Anacardiaceae 195
Anacardium 195
Anacharis 276
Anacolosa 187
Anacyclus 235
Anagallis 242
Anamirta 65
Ananas 281
Anarrhinum 260
Anchomanes 304
Anchusa 249
Ancistrophyllum 318
Andira 175
Andromeda 203
Andropogon 327
Androsace 242
Aneilema 279
Anemone 57
Anemonella 57
Anemonopsis 57
Anethum 201
Angelica 201
Angelonia 263
Aniba 53
Anigozanthus 319
Anisostichus 268
Annona 52
Annonaceae 52
Anoda 129
Anogeissus 123
Anogra 108
Anopterus 137
Antennaria* 230
Anthemis 235

Anthephora 329
Anthericum 296
Anthocephalus 216
Antholyza 312
Anthoxanthum 339
Anthriscus 199
Anthurium* 304
Anthyllis 163
Antiaris 185
Antidesma 136
Antigonon 99
Antirrhinum 261
Apera 337
Aphanes 147
Apicra 296
Apios 175
Apium 201
Apluda 328
Apocynaceae 210
Apocynum 210
Aponogeton 277
Aponogetonaceae 277
Aptenia 95
Aquifoliaceae 186
Aquilaria 110
Aquilegia 56
Arabidopsis 75
Arabis* 76
Araceae 303
Arachis 169
Aralia 198
Araliaceae 198
Araucaria 47
Arbutus 204
Archangelica 201
Arctium 231
Arctophila 344
Arctostaphylos 204
Ardisia 207
Areca 317
Arecastrum 317
Aregelia* 280
Arenaria 90
Arenga 317
Argania 207
Argemone 68
Arisaema 304
Arisarum 304
Aristida 336
Aristolochia 65
Aristolochiaceae 65
Armeria* 242
Armoracia 77
Arnica 233
Arnoseris 224
Aronia 151
Arrhenatherum 346
Artabotrys 52
Artemisia 235
Arthraxon 329
Arthropodium 297
Artocarpus 184
Arum 304
Arundinaria 352, 353
Arundo 352
Asarina 261
Asarum 65
Ascarina 66
Asclepiadaceae 211
Asclepias 211
Ascotainia 321
Asiminia 52
Asparagus 298
Asperella 350
Asperula* 213
Aspidistra 300
Aspidosperma 210
Aster 228
Asteriscus 229
Asteromoea 229
Astilbe 87
Astragalus* 161
Astranthium 228
Astrantia 199
Astrocarpus 84
Astrocaryum 318
Astrophytum 118
Atalantia 190
Atraphaxis 99
Atriplex 100
Atropa 257
Atropis 344
Attalea 318
Atylosia 170
Aubrietia 77
Aucuba 197
Avena 346
Averrhoa 106
Avicennia 271
Axonopus 332
Azalea 204
Azorella 202

Babiana 308
Bactris 318
Baeometra 299
Balanocarpus 121
Balanophora 188
Balanophoraceae 188
Baliospermum 134
Balsaminaceae 107
Balsamorhiza 228
Bambusa 353
Banksia 111
Baphia 174
Baptisia 174
Barbarea 77
Barosma 191
Bartonia 69
Bartsia 266
Basella 102
Basellaceae 102
Bassia* 101, 207
Bastardia 126
Bauhinia 154
Beckmannia 334
Begonia 117
Begoniaceae 117
Belamcanda 311
Bellevalia 285
Bellis 228
Bellium 228
Benincasa 116
Benzoin 53
Berberidaceae 63
Berberis* 64
Bergia 90
Berkheya 234
Bernardia 136
Berria 125
Berteroa 75
Bertholletia 122
Beschorneria 315
Beta 100
Betonica 274
Betula 179
Betulaceae 179
Bidens 227
Bifora 201
Bignonia 268
Bignoniaceae 268
Billbergia 280
Biscutella 71
Biserrula 161
Bivonaea 73
Bixa 112
Bixaceae 112
Bletilla 320
Blighia 194
Blumenbachia 69
Bocconia 69
Boehmeria 185
Boenninghausenia 190
Boerhaavia 111
Boissiera 344
Boltonia 229
Bomarea 303
Bombaceae 126
Bombax 126
Boraginaceae 249
Borago 250

Borassus 318
Boswellia 192
Bothriochloa 328
Bouea 196
Bougainvillea 110
Boussingaultia 101
Bouteloua 334
Bouvardia 212
Bowenia 45
Boykinia 89
Brachiaria 329
Brachypodium 344
Brahea 316, 318
Brassica 79
Braya 75
Brevoortia 291
Breynia 136
Bridelia 136
Briza 340
Brodiaea 288
Bromelia 280
Bromeliaceae 280
Bromus 341
Brosimum 183
Broussonetia 183
Browallia 253
Brownea 153
Bruckenthalia 203
Bruguiera 123
Brunella 274
Brunfelsia 253
Brunonia 247
Bryonia 115
Bryophyllum 86
Buchanania 196
Buchloë 336
Buckleya 187
Buddleia 208
Bulbine 296
Bulbinella 296
Bulbocodium 299
Bulbostylis 324
Bunias 76
Buphthalmum 229
Bupleurum 199
Burchellia 214
Bursera 192
Burseraceae 192
Butea 171
Butia 317
Butomaceae 276
Butomus 276
Butyrospermum 207
Buxaceae 176
Buxus 176
Byrsonima 131
Cabomba 63
Cacalia 232
Cactaceae 118
Cadaba 70
Caesalpinia 153
Caesalpinaceae 153
Caiophora 69
Cajanus 170
Cakile 80
Calamagrostis
Calamus 317
Calandrina 96
Calanthe 321
Calathea 284
Calceolaria 263
Calendula 234
Calepina 78
Calla 303
Callianthemum 60
Callicarpa 271
Calligonum 99
Callirhoë 127
Callisia 278
Callistemma 219
Callistemon 122
Callistephus 229
Callitrichaceae 110
Callitriche 110
Calluna 203
Calocarpum 207
Calochortus 291
Calodendron 192
Calonyction 259
Calophaca 161
Calophyllum 124
Calotropis 212
Caltha 59
Calycadenia 225
Calycanthaceae 153
Calycanthus 153
Calystegia 258
Camassia 287
Camelina 72
Camellia 119
Campanula 245
Campanulaceae 243
Campelia 279
Campsis 268
Canangium 52
Canarium 192
Canavalia 170
Canella 113
Canellaceae 113
Canistrum 280
Canna 284
Cannabinaceae 186
Cannabis 186
Cannaceae 284
Cantua 248
Capillipedium 326
Capparidaceae 70
Capparis 70
Caprifoliaceae 217
Capsella 73
Capsicum 253
Caragana 161
Caraguta 280
Cardamine 77
Cardaminopsis 77
Cardiospermum 193
Carduus 232
Carex* 323
Carica 117
Caricaceae 117
Carichtera 78
Carissa 211
Carlina 232
Carludovica 319
Carmichaelia 163
Carnegia 118
Carpinus 180
Carpodinus 210
Carthamus 232
Carum 200
Carya 196
Caryocar 120
Caryocaraceae 120
Caryophyllaceae 90
Caryota 318
Casimoroa 191
Cassia 154
Cassiope 204
Castanea 181
Castanospermum 174
Castilloa 184
Casuarina 182
Casuarinaceae 182
Catabrosa 340
Catalpa 268
Catesbaea 216
Catha 187
Catharanthus 210
Cattleya 322
Caucalis 199
Caulophyllum 64
Ceanothus 188
Cecropia 184
Cedrela 193
Cedrus 47
Ceiba 126
Celastraceae 186
Celastrus 186
Celosia 102
Celsia* 263

Celtis 183
Cenchrus 331
Cenia 236
Centaurea 231
Centaurium 237
Centotheca 352
Cephaelis 214
Cephalandra 116
Cephalanthera 320
Cephalanthus 216
Cephalaria 219
Cephalorrhynchus 222
Cephalotaxus 46
Cerastium* 90
Ceratonia 155
Ceratopetalum 136
Ceratostigma 242
Ceratozamia 45
Cerbera 210
Cercidiphyllum 52
Cercidiphyllaceae 52
Cercis 154
Cerinthe* 250
Ceropegia 212
Ceroxylon 318
Cestrum 251
Chaenomeles 150
Chaenorrhinum* 260
Chaerophyllum 20
Chaetochloa 330
Chamaecyparis 49
Chamaedorea 316
Chamaepericlymenum 198
Chamaerops 317, 318
Cheiranthus 74
Chelidonium 67
Chelone 261
Chenolea* 101
Chenopodiaceae 100
Chenopodium 101
Chikrassia 193
Chikusichloa 351
Chimaphila* 204
Chimonanthus 153
Chimonobambusa 353
Chionachne 325
Chionanthus 209
Chionodoxa 286
Chloranthaceae 66
Chloranthus 66
Chloris 335
Chlorophora 185
Chlorophytum 296
Chloroxylum 193
Chondrilla* 223
Chorispora 74
Chrozophora 135
Chrysanthemum 235
Chrysobactron 296
Chrysobalanus 153
Chrysophyllum 207
Chrysopogon 327
Chrysosplenium 87
Chrysothamnus 229
Cicer 159
Cichorium 224
Cienfugosia 129
Cimicifuga 56
Cinchona 214
Cineraria 233
Cinnamodendron 113
Cinnamomum 52
Circaea 109
Cirsium* 232
Cissus 189
Cistaceae 113
Cistus 113
Citrullus 115
Citrus 190
Clarkia 109
Clausena 190
Claytonia 96
Cleistogenes 333
Clematis 61
Cleome 70
Clerodendron 271
Clethraceae 202
Clianthus 161
Clintonia 297
Clitandra 211
Clitoria 169
Clivia 306
Clypeola 75
Cnicus 232
Cnidium 202
Cobaea 248
Cocos 317
Coccinia 116
Coccoloba 99
Cocculus 65
Cochlearia 72, 77
Cochlospermaceae 112
Cochlospermum 112
Codiaeum 136
Codonopsis 245
Coelococcus 318
Coelogyne 321
Coelorrhachis 329
Coffea 214
Coix 325
Cola 126
Colchicum 300
Coleotrype 279
Coleus 272
Colliguaja 134
Collinsia 260
Collomia 248
Colocasia 304
Colpoon 187
Colutea 160
Coluteocarpus 72
Combretaceae 123
Comesperma 85
Commelina 279
Commelinaceae 278
Commelinantia 279
Commidendrum 229
Commiphora 192
Compositae 220
Comptonia 179
Conium 200
Connaraceae 196
Connarus 196
Conopharyngia 211
Conringia 78
Convallaria 298
Convolvulaceae 258
Convolvulus 258
Cookia 190
Copaifera 155
Copernica 317
Coprosma 216
Coptis 62
Corallorhiza 322
Corchorus 124
Cordia 251
Cordyline 314, 315
Corema 186
Coreopsis 227
Coriandrum 201
Coriaria 111
Coriariaceae 111
Cornaceae 197
Cornucopiae 337
Cornus 197
Corokia 197
Coronilla 169
Coronopus* 73
Corrigiola 99
Cortaderia 352
Cortusa 242
Corydalis 69
Corylaceae 180
Corylopsis 176
Corylus 180
Corynephorus 345
Coryphanta 118
Corytholoma 267
Cosmos 227
Cossonia 78
Costus 282

Cotula 236
Cotyledon* 86
Couroupita 122
Cousinia 232
Cracca 161
Crambe 79
Crassocephalum 233
Crassula* 85
Crassulaceae 85
Crataegus* 150
Crataeva 70
Crepidiastrum* 221
Crepis* 221
Crescentia 268
Crinum 306
Crithmum 201
Crocus 307
Crotalaria* 172
Croton 134
Cruciferae 71
Crucianella* 213
Crupina 232
Crypsis 334
Cryptanthus 280
Cryptocarya 53
Cryptomeria 46
Cryptostegia 212
Cucubalus 91
Cucumis 114
Cucurbita 116
Cucurbitaceae 114
Cudrania 185
Cuminum 202
Cunninghamia 47
Cunonia 136
Cunoniaceae 136
Cupressaceae 49
Cupressus 49
Cuphea 107
Curculigo 319
Curcuma 283
Cuscuta 258
Cuthbertia 278
Cyamopsis 160
Cyanotis 279
Cycas 45
Cycadaceae 45
Cyclamen 242
Cyclanthaceae 319
Cyclanthera 115
Cydonia 150
Cymbalaria 260
Cymbidium 321
Cymbopogon 327
Cynanchum 212
Cynara 232
Cynocrambaceae 100
Cynodon 335
Cynometra 155
Cynomorium 188
Cynosurus 340
Cynoxylon 198
Cyperaceae 323
Cyperus 323
Cyphomandra 253
Cypripedium 320
Cyrtanthus 306
Cytinaceae 66
Cytisus 173

Daboecia 203
Dactylaena 71
Dactylis 340
Dactyloctenium 333
Dahlia 226
Dalbergia 175
Danaë 302
Danthonia 346
Daphne 110
Daphniphyllum 134
Darlingtonia 89
Dasylirion 314
Datisca 117
Datiscaceae 117
Datura 253
Daucus 200
Davidia 198
Debregeasia 186
Decaisnea 64
Decodon 107
Delonix 155
Delosperma 96
Delphinium 60
Dendrobenthamia 198
Dendrobium 321
Dendrocalamus 354
Dendrochilum 322
Dendrophthora 187
Dentaria 78
Derris 175
Deschampsia 345
Descurainia 76
Desmazeria 344
Desmodium 169
Detarium 155
Deutzia 138
Diamorpha 86
Dianella 298
Dianthus 92
Diapensia 206
Diapensiaceae 206
Diascia 263
Dicentra 69
Dichanthium 327
Dichelostemma 288, 291
Dichorisandra 279
Dicranostigma 67
Dicypellium 53
Didiscus 202
Dieffenbachia 303
Dierama 312
Diervilla 217
Digera 102
Digitalis 260
Digitaria 331
Dillenia 111
Dilleniaceae 111
Dimorphotheca 234
Dinebra 335
Dioclea 171
Dionaea 89
Dioon (Dion) 45
Dioscorea 313
Dioscoreaceae 313
Diospyros 206
Dipcadi 285
Diphyllea 63
Diplachne 333
Diplacus 262
Diplotaxis 80
Dipsacaceae 219
Dipsacus 220
Dipterocarpus 121
Dipteryx 175
Dipterocarpaceae 121
Disporum 297
Distylium 176
Dolichos 170
Dolicothele 118
Dopatrium 260
Dorema 202
Doronicum 234
Dorstenia 183
Doryanthes 315
Dorycnium 164
Doxantha 268
Draba 75
Dracaena 314
Dracocephalum 275
Drimys 51
Drimiopsis 287
Drosera 89
Droseraceae 89
Drosophyllum 89
Dryas 148
Drymaria 90
Dryobalanops 121
Duboisia 258
Dubyaea 221
Duchesnea 145
Duguetia 52

Dulichium 324
Dupontia 345
Duranta 271
Durio 126
Dyckia 280
Dyera 211
Dysoxylum 193

Ebenaceae 206
Ecballium 116
Echeveria 86
Echinocereus* 118
Echinochloa 331
Echinocystis 115
Echinodorus 277
Echinofossulocactus 118
Echinops 231
Echium* 250
Edgeworthia 110
Edraianthus 244
Ehrharta 351
Eichhornia 302
Elaeagnaceae 188
Elaeagnus 188
Elaeis 317
Elaeocarpus 125
Elatinaceae 90
Elatine 90
Elatinoides 260
Eleocharis 323
Eletteria 283
Eleusine 332
Elodea 276
Elymus 348
Emex 97
Emilia 232
Empetraceae 186
Empetrum 186
Encephalartos 45
Enhalus 276
Enkianthus 203
Enneapogon 336
Entada 156
Ephedra 50
Ephedraceae 49
Epigaea 205
Epidendrum 322
Epilobium* 109
Epimedium 63
Epipactis 320
Epiphyllum* 118
Eragrostis 333
Eranthis 60
Erectites 233
Eremopogon 327
Eremurus 296
Erianthus 328
Erica* 204
Ericaceae 203
Erigeron 229
Eriobotrya 151
Eriocaulaceae 279
Eriocaulon 279
Eriochloa 331
Eriophorum 324
Erioxylon 131
Erodium 105
Erophila 75
Eruca 81
Erucaria 78
Erucastrum* 78
Eryngium* 199
Erysimum 74, 77
Erythraea 237
Erythrina 170
Erythronium 295
Erythroxylaceae 131
Erythroxylon 131
Escallonia 137
Escalloniaceae 137
Eschscholtzia 67
Escobaria 118
Eucalyptus 121
Eucarya 187
Eucharidium 109
Eucharis 307
Euchlaena 325
Euclasta 327
Euclidium* 74
Eucomis 287
Eucommia 176
Eucommiaceae 176
Eugenia 121
Eunomia 72
Euonymus 186
Eupatorium 237
Euphorbia 132
Euphorbiaceae 132
Euphrasia* 266
Euptelea 51
Eurotia 101
Euryale 63
Euterpe 318
Eutrema 76
Excoecaria 135
Exochorda 147
Exogonium 259
Exostemma 214

Fabiana 251
Fagaceae 181
Fagopyrum 97
Fagraea 208
Fagus 181
Farsetia 73
Fatsia 198
Faurea 111
Fedia 218
Feijoa 122
Felicia 228
Ferocactus 118
Feronia 190
Ferula 201
Festuca 340, 342, 344
Fibigia 73
Ficus 183
Ficoidaceae 95
Filago 230
Filipendula 148
Fimbristylis 323
Firmiana 125
Flacourtia 112
Flacourtiaceae 112
Flindersia 193
Fluggea 136
Foeniculum 201
Forestiera 209
Forsythia 209
Fortunella 191
Fothergilla 176
Fouquieraceae 114
Fouquieria 114
Fourcroya* 315
Fragaria 144
Francoa 89
Frankenia 114
Frankeniaceae 114
Fraxinus 209
Freesia 312
Fritillaria 291
Fuchsia 109
Fugosia 129
Fumaria 69
Fumariaceae 69
Funkia 299
Funtumia 211
Furcraea* 315

Gagea 295
Gaillardia 234
Galax 206
Galega 161
Galeopsis* 274
Galepuda 175
Galinsoga 227
Galipea 192
Galium 213
Galtonia 287
Garcinia 124
Gardenia 215
Garrya 178

Garryaceae 178
Garuga 192
Gasteria* 296
Gastridium 336
Gaultheria 203
Gaulthettia 203
Gaura 108
Gaylussacia 205
Gayophytum 109
Gazania 234
Genista 173
Gentiana 237
Gentianaceae 237
Geraniaceae 104
Geranium 105
Gerbera 237
Gesneria 267
Gesneriaceae 267
Geum 144
Gibbaeum* 95
Gilia 248
Gingko 45
Gingkoaceae 45
Girardina 186
Gisekia 95
Gladiolus 312
Glaucidium 62
Glaucium 67
Glaux 242
Gliricidia 163
Globba 283
Globularia 270
Globulariaceae 270
Gloriosa 297
Gloxinia 267
Glyceria 340
Glycine 170
Glycyrrhiza 161
Gnaphalium 230
Gnetaceae 50
Gnetum 50
Godetia 108
Goldbachia 76
Gomphocarpus 211
Gongora 322
Goodeniaceae 247
Goodyera 320
Gordonia 120
Gossypioides 129
Gossypium 129
Gramineae 325
Greigia 281
Grevillea 111
Grewia 124
Grias 122
Griffinia 307
Griselina 197
Grossulariaceae 137
Guaiacum 104
Guazuma 125
Gueldenstaedtia 160
Guizotia 227
Gunnera 109
Guttiferae 124
Gymnadenia 322
Gynandropsis 70
Gynerium 352
Gynura 233
Gypsophila 94

Habenaria 322
Hablitzia 101
Habranthus 305, 307
Hacquetia 199
Haemanthus 306
Haematoxylon 153
Haemodoraceae 319
Hagenia 147
Hakonechloa 352
Halesia 208
Halimione 100
Halimum 113
Halliophytum 136
Halogeton 101
Halorrhagaceae 109
Haloxylon 101
Hamamelidaceae 176
Hamamelis 176
Hamatocactus 118
Hamelia 216
Haploclathra 120
Haplopappus 229
Hardwickia 155
Harpullia 194
Haworthia* 296
Haynaldia 347
Hebe 265
Hebenstreitia 270
Hechtia 280
Hedera 198
Hedychium 283
Hedypnois 224
Hedysarum 168
Helenium 234
Heleocharis 323
Heleochloa 334
Heliamphora 90
Helianthemum 113
Helianthus 228
Helichrysum 230
Heliconia 282
Helictotrichon 346
Heliophila 81
Heliopsis 226
Heliotropum 250
Helleborus 59
Helodea 276
Helonias 300
Heloniopsis 300
Helosciadium 201
Helwingia 199
Hemerocallis 299
Hemidesmus 212
Hemizonia 225
Hermodactylus 311
Herrania 125
Hesperis 74
Hesperoaloë 316
Hesperoyucca 316
Heteropogon 326
Heterospermum 227
Heterotropa* 65
Heuchera 87
Hevea 134
Hibbertia 111
Hibiscus* 128
Hidalgoa 227
Hieracium* 222
Hierochloë 339
Hippeastrum 307
Hippocrepis 167
Hippophae 188
Hirtella 153
Hoffmannia 216
Holarrhena 211
Holcus 345
Holocarpha 225
Holoptelea 183
Holozonia 226
Homalanthus 134
Homalocephala 118
Homeria 312
Homogyne 234
Honckenya 91
Hopea 121
Hordeum 347
Hosta* 299
Hottonia 242
Houstonia 212
Houttuynia 66
Hovea 174
Hovenia 188
Hoya 211
Hugelia 247
Humulus 186
Hunnemannia 86
Hura 136
Hutchinsia 71
Hyacinthus 285, 287
Hybanthus 84
Hydnocarpus 112

Hydrangea 139
Hydrangeaceae 138
Hydrastis 62
Hydrilla 276
Hydrocera 107
Hydrocharis 276
Hydrocharitaceae 276
Hydrocleis 276
Hydrocotyle 200
Hydrolea 249
Hydrophyllaceae 248
Hydrophyllum 248
Hydrostachys 90
Hygrophylla 269
Hygroryza 351
Hylocereus* 118
Hylomecon 67
Hymenocallis 307
Hymenocarpus 164
Hymenodictyon 215
Hymenophysa 73
Hyoscyamus 258
Hypecoum 68
Hypericaceae 123
Hypericum 123
Hyposhaeris 224
Hypoxidaceae 319
Hyssopus 275

Iberis 72
Ibervillea 116
Icacorea 207
Ilex* 186
Illecebraceae 99
Illicum 51
Ilysanthes 263
Impatiens 107
Imperata 328
Incarvillea 268
Indigofera 160
Indocalamus 353
Inocarpus 175
Inula* 229
Ionidium 84
Ionopsidium 73
Ipomoea 258, 259
Iridaceae 307
Iris 308
Irvingia 192
Isatis 76
Ischaemum 328
Isomeris 71
Isopyrum 57
Itea 137
Ixeris* 221
Ixia 312
Ixora* 215

Jamesia 138
Jasione 244
Jasminum 208
Jatropha 135
Jatrorrhiza 65
Jeffersonia 63
Jessenia 318
Jaborosa 253
Jacaranda 268
Jubaea 318
Juglandaceae 196
Juglans 196
Juncaceae 322
Juncus* 323
Juniperus 49
Jurinea 232
Jussieua 109
Justicia 269

Kadsura 51
Kaempferia 283
Kalanchoë 86
Kalmia 203
Kalopanax 199
Kentranthus 218
Kernera 73
Kerria 148
Kerstingiella 171
Kickxia* 260
Kigelia 268
Kitaibelia 129
Kitchingia 86
Knautia 220
Kniphofia 295
Knowltonia 60
Kobresia 324
Kochia 101
Koeleria 345
Koelreuteria 193
Kokia* 129
Kokoona 187
Kolkwitzia 217
Krameria 85
Kyllinga 324

Labiatae 271
Labisia 208
Laburnum 174
Lachenalia 286
Lactuca 222
Lagarosiphon 276
Lagenaria 115
Lagerstroemia 108
Lagetta 110
Lagophylla* 226
Lagurus 336
Lamarckia 344
Lamium* 274
Landolphia 211
Lannea 196
Lansium 193
Lantana 271
Lapeyrousia 312
Laportea 186
Lardizabala 64
Lardizabalaceae 64
Larix 47
Larrea 104
Lathraea 266
Lathyrus 158
Launaea 223
Lauraceae 52
Laurus 52
Lavandula 272
Lavatera 127
Lawsonia 108
Layia* 226
Lecythidaceae 122
Lecythis 122
Ledum 204
Leersia 352
Leiophyllum 203
Lemna 304
Lemnaceae 304
Lens 158
Lentibulariaceae
Leontodon* 224
Leontopodium 230
Leopoldina 318
Lepidium 73
Leptochloa 333
Leptodermis 216
Leptosyne 227
Lepturus 336
Leschenaultia 247
Lespedeza 168
Lesquerella 71
Leucadendron 111
Leucaena 156
Leucas 275
Leucojum 305
Leucothoe 204
Levisticum 201
Liatris 236
Ligularia 233
Ligusticum 201
Ligustrum* 209
Liliaceae 285
Lilium 292
Limnanthaceae 106
Limnanthes 106
Limnophyton 277
Limonium 243
Limosella 262

Linaceae 102
Linanthus 248
Linaria* 260
Lindera 53
Lindmannia 281
Linum* 102
Liparis 320
Lipocarpha 324
Lippia 271
Liquidambar 176
Liriodendron 51
Liriope 300
Listera 320
Litchi 193
Lithospermum 249
Livistonia 318
Lloydia 295
Loasa 69
Loasaceae 69
Lobelia 246
Lobeliaceae 246
Lobostemon* 249
Lobularia 75
Lochnera 210
Lodoicea 318
Loganiaceae 208
Logotis 263
Loiseleuria 203
Lolium 340
Lonchocarpus 175
Lonicera* 217
Lopezia 109
Lophira 120
Lophocereus 118
Lophophora 118
Loranthaceae 187
Loranthus 187
Lotus 164
Luculia 216
Lucuma 207
Luffa 116
Luisia 322
Lunaria 74
Lupinus 173
Luzula* 322
Lychnis* 90, 91
Lycium 254
Lycopersicum 254
Lycopus* 275
Lycoris 305
Lycurus 334
Lygeum 336
Lygistum 213
Lysimachia 242
Lythraceae 107
Lythrum 107
Macadamia 111
Macleaya 69
Maclura 185
Macrocarpium 197
Macrochordium 280
Macrozamia 45
Maddenia 148
Madhuca 207
Madia 226
Maerua 70
Magnolia 51
Magnoliaceae 51
Mahonia 63
Maianthemum 297
Malachium 91
Malachra 127
Malcomia 74
Mallotopus 233
Malope 129
Malotus 135
Malpighia 131
Malpighiaceae 131
Malus 151
Malva 127
Malvaceae 126
Malvastrum* 129
Malvaviscus 127
Mammea 124
Mammilaria 118
Manettia 213
Manfreda 316
Mangifera 195
Manihot 135
Manilkara 207
Manisuris 329
Maoutia 186
Maranta 284
Marantaceae 284
Marantochloa 284
Marica 308
Maricus 324
Marlea 198
Marsdenia 212
Martynia 269
Mascarenhasia 210
Matricaria 236
Matthiola 74
Maurandia 262
Mauritia 318
Maximowiczia 116
Meconopsis 68
Medeola 302
Medicago 165
Mediocactus 118
Melaleuca 122
Melampyrum* 266
Melandrium 91
Melanorrhoea 196
Melastoma 123
Melastomaceae 123
Melia 193
Meliaceae 193
Melica 344
Melicocca 194
Melinis 330
Melilotus 167
Melocanna 354
Melothria 116
Memecylon 123
Menispermaceae 65
Menispermum 65
Menonvillea 81
Mentha 272
Mentzelia 69
Menyanthes 237
Mercurialis 134
Merendera 300
Merremia 259
Mertensia 249
Mesembryanthemum 95
Mespilus 151
Mesua 124
Metroxylon 318
Mibora 337
Michelia 51
Micrampelis 115
Microcitrus 190
Microcycas 45
Microlaena 352
Miersia 306
Milium 350
Millettia 161
Millingtonia 268
Mimosa 155
Mimosaceae 155
Mimulus 262
Mimusops 207
Mina 258
Mirabilis 110
Miscanthus 328
Mitrastemon 66
Mitrophora 218
Modiola 128
Molinia 344
Molluginaceae 94
Mollugo 94
Momordica 115
Monarda 272
Mondo 300
Monerma 336
Moneses 203
Monochoria 302
Monodora 52
Monolepis 101

Monsonia 106
Monstera 303
Moquilea 153
Moraceae 183
Moricanda 78
Morina 220
Moringa 71
Moringaceae 71
Morisia 78
Morus 185
Mosla 275
Mucuna 172
Muehlenbeckia 98
Muehlenbergia 334
Mulgedium 222
Muntingia 125
Murraya 190
Musa 281
Musaceae 281
Muscari 287
Mussaenda 215
Myagrum 76
Myosotis 250
Myosurus 60
Myrica 179
Myricaceae 179
Myricaria 114
Myriophyllum 110
Myristica 53
Myristicaceae 53
Myroxylon 174
Myrrhis 202
Myrsinaceae 207
Myrsine 207
Myrtaceae 121
Myrtus 121

Naegelia 267
Naiadaceae 278
Naias 278
Nandina 63
Napaea 128
Narcissus 305
Nardostachys 219
Nardus 336
Narenga 328
Narthecium 300
Nasella 351
Nasturtium 77
Neea 111
Nelumbium 63
Nelumbo 63
Nemesia* 262
Nemophila 248
Neomammilaria* 119
Neomarica 308
Nepenthaceae 66
Nepenthes 66
Nepeta 274
Nephelium 194
Nerine 307
Nerium 210
Nertera 216
Nesaea 107
Neslia 72
Neurada 144
Nicandra 252
Nicolaja 283
Nicotiana 251
Nidularium* 280
Nierembergia 251
Nigella 54
Nigritella 321
Nipa 316
Nolana 258
Nolanaceae 258
Nomocharis 292
Nopalaea 119
Nothoscordum 290
Notonia 233
Nuphar 63
Nuttallia 148
Nuytsia 187
Nyctaginaceae 110
Nyctanthes 209
Nycterinia 259
Nyctocereus 119
Nymphaea 62
Nymphaeaceae 62
Nyssa 198
Nyssaceae 198

Obione 100
Ochlandra 354
Ochna 120
Ochnaceae 120
Ochroma 126
Ocimum 274
Odina 196
Odontadena 210
Odontites* 266
Odontospermum 229
Oenanthe 202
Oenocarpus 319
Oenothera* 108
Ofaiston 101
Olacaceae 187
Oldenlandia 212
Olea 209
Oleaceae 208
Olearia 229
Omphalea 136
Omphalodes 250
Omphalogramma 242
Onagraceae 108
Oncidium 320
Oncosperma 319
Onobrychis 168
Ononis 167
Onopordon 232
Onuris 78
Operculina 259
Ophiocaryon 195
Ophiopogon 300
Ophrys 321
Oplismenus 331
Opopanax 202
Opuntia 119
Orchidaceae 320
Orchis 321
Oreodoxa 319
Ornithidium 322
Ornithogalum 286
Ornithopus 168
Orobanchaceae 266
Orobanche 266
Oroxylon 268
Orychophragmus 81
Oryza 351
Oryzopsis 351
Osmanthus 209
Osmaronia 148
Ostrya 180
Ostryopsis 181
Osyris 187
Othonna 233
Ottelia 276
Oxalidaceae 106
Oxalis 106
Oxandra 52
Oxyanthus 216
Oxychloe 322
Oxycoccus 205
Oxydendron 204
Oxyria 96
Oxytropis 161

Pachyrrhizus 170
Pachystima 186
Paeonia 53
Palaquium 207
Palisota 279
Palmaceae 316
Panax 198
Pancratium 307
Pandanaceae 319
Pandanus 319
Pangium 113
Panicum 330
Papaver 67
Papaveraceae 67

Paphiopedilum 320
Papiloniaceae 156
Paradisea 296
Parietaria 185
Paris 301
Parkinsonia 155
Parochetus 167
Parthenium 226
Parnassia 89
Paspalidium 330
Paspalum 331
Passiflora 114
Passifloraceae 114
Pastinaca 202
Patrinia 218
Paullinia 194
Paulownia 263
Pavetta 215
Pavonia 126
Pecteilis 322
Pedaliaceae 269
Pedalium 269
Pedicularis* 266
Pedilanthus 135
Peganum 103
Pelargonium 104
Peltandra 304
Peltaria 72
Peltophorum 155
Penicillaria 329
Pennisetum 329
Pentactina 148
Pentadesma 124
Pentapterygium 205
Pentas 213
Pentstemon 261
Peperomia 66
Peplis 107
Perdicium 237
Pereskia 119
Periploca 212
Pernettya 203
Persea 53
Petagnia 199
Petasites* 233
Petiveria 100
Petrea 271
Petrocoptis 91
Petroselinum 202
Petunia 251
Peucedanum 201, 202
Phacelia 249
Phacellanthus 266
Phaenosperma 351
Phaeomeria 283
Phaeopappus 231
Phalaris 339
Pharbitis 258, 259
Phaseolus 171
Philadelphus 138
Philodendron 304
Phippsia 339
Phleum 337
Phlomis 275
Phlox 247
Phoenix 317
Pholiurus 336
Phormium 316
Photinia 151
Phragmites 352
Phryma 271
Phuopsis 213
Phyllanthus 136
Phyllodoce 203
Phyllostachys 353
Physalis 254
Physocalymma 108
Physocarpus 148
Phytelephas 319
Phyteuma 246
Phytolacca 99
Phytolaccaceae 99
Picea 49
Picrasma 192
Picridium 223
Picris 224
Pieris 203
Pilocarpus 192
Pimenta 122
Pimpinella 200
Pinaceae 46
Pinguicula 267
Pinus 48
Piper 66
Piperaceae 66
Piptanthus 174
Pirola* 205
Pistacea 196
Pistia 304
Pistonia 111
Pisum 158
Pitcairnia 281
Pithecolobium 156
Pittosporaceae 112
Pittosporum 112
Plantaginaceae 243
Plantago 243
Platanaceae 176
Platanthera 322
Platanus 176
Platyclinis 322
Platycodon 245
Platystemon 67
Pleioblastus 353
Pleione 322
Pleuropterus 99.
Plumbaginaceae 242
Plumbago 242
Plumeria 211
Poa* 342
Podanthum 244
Podocarpus 46
Podophyllum 63
Podostemonaceae 90
Poga 123
Pogonatherum 326
Pogostemon 275
Poinciana 155
Polanisia 70
Polemoniaceae 247
Polemonium* 248
Pollia 278
Polyalthia 52
Polyanthes 315
Polycodium 205
Polygala 84
Polygalaceae 84
Polygonaceae 96
Polygonatum 297
Polygonum 98
Polypogon
Polytoca 325
Poncirus 191
Pongamia 175
Pontederiaceae 302
Ponzolzia 186
Populus* 177
Portlandia 215
Portulaca* 96
Portulacaceae 96
Posoqueria 216
Potamogeton 277
Potamogetonaceae 277
Potentilla* 143
Poterium 144
Prenanthes* 222
Primula 237
Primulaceae 237
Prinsepia 148
Pritchardia 319
Priva 270
Prosopsis 156
Protea 111
Proteaceae 111
Protium 193
Prunella* 274
Prunus 148
Psamma 337
Pseudananas 281
Pseudolarix 47
Pseudosasa 353

Pseudotsuga 49
Psidium 122
Psilurus 336
Psophocarpus 172
Psoralea 163
Psychotria 214
Pteridophyllum 69
Pterocarpus 175
Pterocarya 197
Pterocephalus 220
Pterostegia 97
Pterostyrax 208
Puccinellia 344
Pueraria 172
Pulicaria 229
Pulmonaria 249
Pulsatilla 57
Punica 108
Punicaceae 108
Puschkinia 285
Putranjiva 136
Puya 280
Pycnanthus 53
Pycnocoma 136
Pyrola* 203, 205
Pyrus 150, 152
Pyxidanthera 206

Quamoclit 258
Quassia 192
Quercus 181
Quillaja 153
Quisqualis 123

Raffenaldia 78
Rafflesia 66
Rafflesiaceae 66
Ramischia 205
Ramonda 267
Randia 215
Ranunculaceae 53
Ranunculus* 58
Raoulia 230
Raphano-Brassica 80
Raphanus 80
Raphia 319
Raphiolepis 151
Rapistrum 78
Ravenala 282
Reboudia 78
Rehmannia 260
Reichardia 223
Reineckia 301
Remiria 324
Reseda 84
Resedaceae 84
Reynoutria 99
Rhagadiolus 224
Rhamnaceae 188
Rhamnus 188
Rheum 98
Rhilobotrya 73
Rhinanthus 266
Rhipsalis 119
Rhizophora 123
Rhizophoraceae 123
Rhodea 301
Rhododendron 204
Rhodotypos 148
Rhoeo 278
Rhus 195
Rhynchelytrum 330
Rhynchosia 170
Ribes 137
Richardia 216
Richardsonia 216
Ricinus 135
Ricotia 74
Rivina 100
Robinia 163
Rodgersia 89
Rodigia 221
Roemeria 67
Rohdea 301
Romulea 313
Rondeletia 213
Roripa* 78
Rosa 139
Rosaceae 139
Rosmarinus 272
Rottboellia 329
Rourea 196
Roxburghiaceae 313
Rubia 213
Rubiaceae 212
Rubus* 145
Ruellia 269
Rumex 97
Runyonia 316
Ruppia 277
Ruppiaceae 277
Ruscaceae 302
Ruschia 96
Ruscus 302
Russelia 263
Ruta 191
Rutaceae 189

Sabal 317
Sabia 195
Sabiaceae 195
Saccharum 328
Sagittaria 177
Saintpaulia 267
Salicaceae 177
Salicornia 100
Salix 177
Salpichroa 254
Salpiglossis 253
Salsola 101
Salvadora 187
Salvadoraceae 187
Salvia 273
Sambucus 218
Samuela 315
Sanguinaria 69
Sanguisorba 144
Sanicula 199
Sanseveria 315
Santalaceae 187
Santalum 187
Sapindaceae 193
Sapindus 194
Sapium 135
Saponaria 91
Sapotaceae 207
Saraca 153
Saracha 257
Sarcanthus 321
Sarcocephalus 214
Sarcococca 176
Sarracenia 90
Sarraceniaceae 89
Sasa 353
Sasaella 352
Sasamorpha 353
Sassafras 53
Satureia 275
Sauromatum 303
Saurruraceae 66
Saussurea 232
Sauvagesia 120
Saxifraga* 88
Saxifragaceae 87
Scabiosa 219
Scaevola 247
Scandix 199
Schievereckia 75
Schisandra 51
Schisandraceae 51
Schismus 345
Schizanthus 252
Schizocodon 206
Schizopetalum 71
Schleichera 194
Schlumbergia 119
Sciadopitys 46
Sciaphylla 277
Scilla 286
Scirpus 324
Sclerachne 325

Scleranthus 99
Sclerochloa 344
Scleropoa 344
Sclerostachya 328
Scoliopus 302
Scolymus 225
Scoparia 263
Scopolia 254
Scorpiurus 167
Scorzonera 224
Scrophularia 263
Scrophulariaceae 259
Scurrula 187
Scutellaria* 274
Sebastiana 134
Secale 347
Sechium 116
Securigera 163
Sedella* 86
Sedum 85
Selaginaceae 270
Selenicereus 119
Semecarpus 195
Semele 302
Semiarundinaria 353
Sempervivum 86
Senecio* 233
Sequoia 46
Sequoiadendron 46
Serissa 216
Serratula 232
Sesamum 269
Sesbania 159
Sesleria 344
Sesuvium 95
Setaria 330
Setcreasia 278
Shantzia 131
Shepherdia 189
Sherardia 213
Shorea 121
Shortia 206
Sibbaldia 144
Sibiraea 148
Sicyos 116
Sida* 128
Sidalcea 129
Sieglingia 347
Silene* 91
Simaba 192
Simaruba 192
Simarubiaceae 192
Sinapis 79
Sinninga 267
Sinobambusa 353
Sisymbrella 78
Sisymbrium 75, 76
Sisyrinchium 312
Sitanion 350
Sium 200
Smilaceae 302
Smilacina 297
Smilax 302
Smyrnium 202
Solanaceae 251
Solandra 253
Solanum 254
Solidago 229
Sollya 112
Sonchus 223
Sophia 76
Sophora 174
Sopubia 266
Sorbus 152
Sorghastrum 328
Sorghum 326
Sparaxis 308
Sparganiaceae 305
Sparganium 305
Sparmannia 260
Spartina 335
Spartium 174
Spathiphyllum 303
Spathodea 268
Specularia 245
Spergula 90
Spermacoce 216
Sphaeralcea* 126
Sphenogyne 234
Sphenopus 340
Spinacea 100
Spinifex 329
Spiraea 148
Spirodela 304
Spironema 278
Spondias 195
Sporobolus 334
Sprekelia 307
Stachys 271
Stachytarpheta 271
Stangeria 45
Stanhopea 322
Stapelia 211
Staphylaceae 195
Staphylea 195
Statice 243
Stelis* 320
Stellaria 90
Stemodia 260
Stemona 313
Stenanthium 298
Stenopetalum* 71
Stenophragma 76
Stephanotis 212
Sterculia 125
Sterculiaceae 125
Sternbergia 307
Stevia 232
Stigmaphyllon 131
Stillingia 135
Stipa 350
Stiporyzopsis 351
Stizolobium 172
Stranvaesia 151
Stratiotes 276
Strelitzia 282
Strelitziaceae 281
Streptocarpus 267
Streptopus 297
Strobilanthes 269
Strychnos 208
Stylidiaceae 247
Stylidium 247
Stylophorum 67
Styracaceae 208
Styrax 208
Suaeda 101
Succisa 220
Succowia 79
Swainsonia 160
Swertia 237
Swietenia 193
Symphonia 124
Symphoricarpus 217
Symphyandra 246
Symphytum 250
Syringa* 209

Tacca 319
Taccaceae 319
Tagetes 234
Tainia 321
Taiwania 46
Talinum* 96
Tamarindus 154
Tamaricaceae 114
Tamarix 114
Tamus 314
Tanacetum 236
Taraktogenos 113
Taraxacum* 223
Taraxia 108
Tauscheria 76
Taxaceae 46
Taxodium 46
Taxus 46
Tecoma 268
Tecomella 268
Tecophilaea 301
Tecophilaeaceae 301
Tectona 271

Teesdalia 73
Telekia 229
Tellima 87
Tephrosia 161
Terminalia 123
Ternstroemia 120
Ternstroemiaceae 119
Testudinaria 314
Tetracentron 52
Tetragonia 95
Tetragonocalamus 353
Tetrapanax 198
Teucrium 271
Thalia 284
Thalictrum 55
Thea 119
Theaceae 119
Thelocactus 119
Thelygonaceae 100
Thelygonum 100
Thelymitra 320
Themeda 327
Theobroma 125
Therberia 131
Thermopsis 174
Thesium 187
Thespesia 131
Thevetia 211
Thladiantha 115
Thlaspi 72
Thrinax 317
Thrincia 224
Thryallis 131
Thuja 49
Thunbergia 269
Thymelaeaceae 110
Thymus 272
Thysanocarpus 74
Tiarella 88
Tigridia 312
Tillandsia 280
Tilia 124
Tiliaceae 124
Tillaea 86
Tinantia 279
Tinospora 65
Toddalia 192
Tofieldia 300
Toisusu 178
Tolmiea 87
Torenia 262
Torreya 46
Tovaria 98
Tozzia 266
Trachelospermum 210
Trachycarpus 317
Trachylobium 155
Trachymene 202
Tradescantia* 278
Tragopogon 224
Tragus 334
Trapa 109
Trautvetteria 60
Treculia 185
Treleasia 278
Trianthema 95
Tribulus 104
Trichachne 330
Trichloris 336
Tricholaena 330
Trichosanthes 115
Tricyrtis* 300
Tridax 233
Trientalis 242
Trifolium 164
Trigonella 166
Trilliaceae 301
Trillium 301
Triphasia 191
Triplaris 99
Tripsacum 325
Trisetum 345
Triteleia* 288
Triticale 350
Triticum 348
Tritonia 312
Triumfettia 125
Triuridaceae 277
Trochodendraceae 51
Trochodendron 51
Trollius 59
Tropaeolum 106
Tropaeolaceae 106
Tsuga 47
Tulipa 293
Tunica 92
Turritis 78
Tussilago 233
Tylophora 212

Ulex 172
Ullucus 102
Ulmaceae 182
Ulmus 182
Umbelliferae 199
Uncaria 216
Uniola 352
Urachne 351
Uragoga 214
Urena 126
Urginea 285
Ursinia 234
Urtica 185
Urticaceae 185
Utricularia 267
Uvularia 297

Vaccaria 92
Vacciniaceae 205
Vaccinium 205
Vahlia 87
Vaillantia 212
Valeriana 218
Valerianella* 218
Valerianaceae 218
Vallisneria 276
Vallota 306
Vanda 320
Vangieria 214
Vanilla 320
Vateria 121
Veltheimia 299
Venidium 234
Ventenata 345
Veratrum 298
Verbascum 262
Verbena 270
Verbenaceae 270
Veronica 264
Vesicaria* 75
Vetiveria 327
Viburnum 217
Vicia 157
Victoria 63
Vigna 171
Vinca 210
Vincetoxicum 212
Viola* 81
Violaceae 81
Viscaria 91
Viscum 187
Vitaceae 189
Vitex 271
Vitis 189
Voandezia 172
Vogelia 72
Vulpia 340

Wahlenbergia 244
Walsura 193
Washingtonia 316
Watsonia 312
Weddelina 90
Weigelia 217
Weinmannia 136
Welwitschia 50
Welwitschiaceae 50
Werkleocereus 119
Wigandia 249
Wikstroemia 110
Wilcoxia 119

Winteraceae 51
Wissadula* 127
Wistaria 161
Withania 257
Wolfia 305
Woodfordia 108
Wormia 111
Wyethia 228

Xanthium 227
Xanthorrhoea 314
Xanthorrhoeaceae 314
Xanthosoma 303
Xanthoxylum 191
Xeranthemum 231
Xerodraba 78
Ximenia 187
Xylia 156
Xylopia 52

Youngia 221
Yucca 316

Zacyntha 224
Zaluzianskia 259
Zamia 45
Zannichellia 277
Zannichelliaceae 277
Zantedeschia 304
Zanthorrhiza 62
Zanthoxylum 191
Zauschneria 109
Zea 325
Zebrina 278
Zelkova 183
Zephyranthes 305
Zingiber 283
Zingiberaceae 282
Zinnia 227
Zizania 352
Zizaniopsis 352
Zizyphus 188
Zoisia 334
Zostera 277
Zosteraceae 277
Zygadenus 298
Zygocactus 119
Zygopetalum 322
Zygophyllaceae 103
Zygophyllum 103

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